Final Report

InterVISTAS
CONSULTING INC.

The Economic Impact of the 2010 Winter Olympic and Paralympic Games:

An Update

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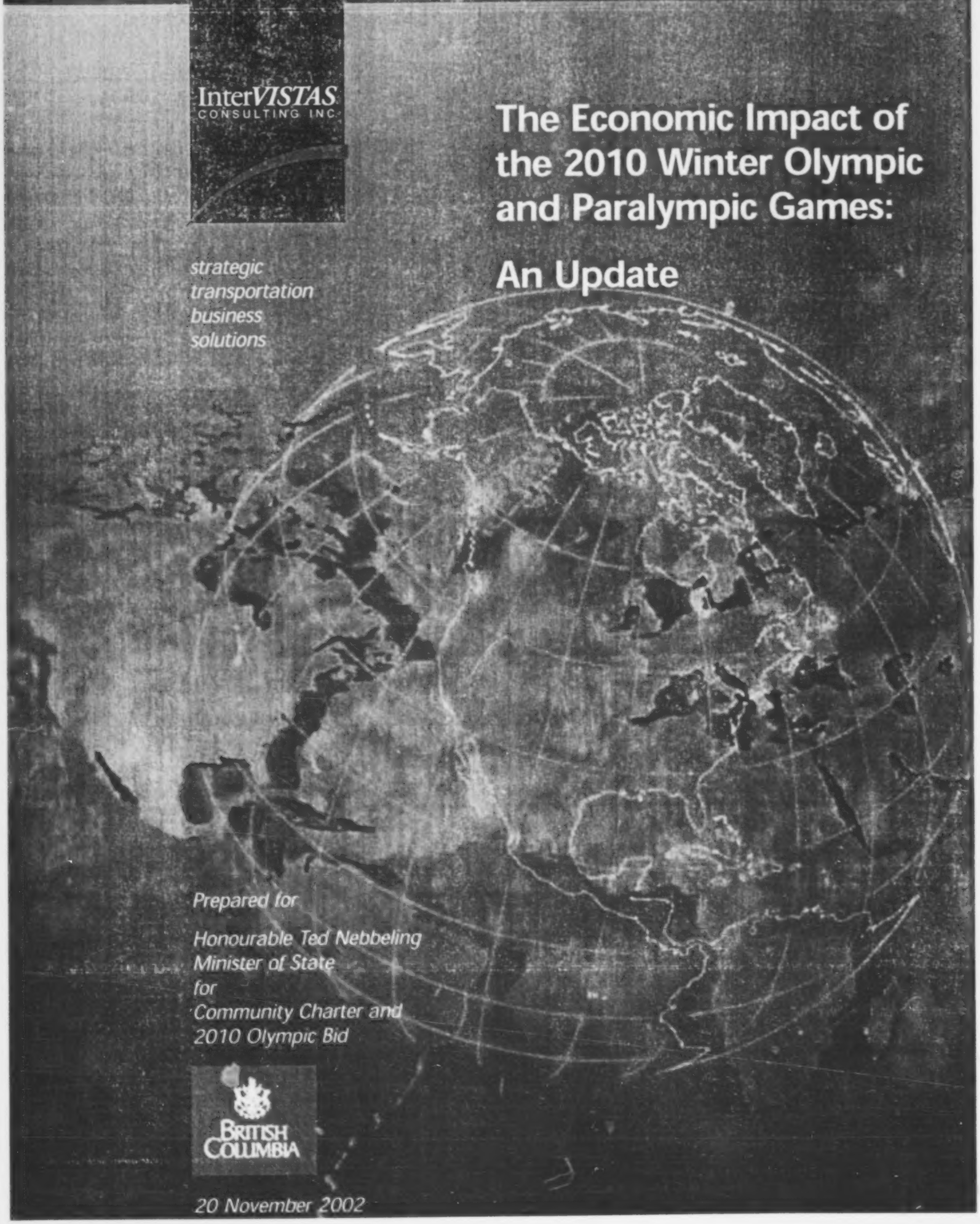
solutions



Prepared for

Honourable Ted Nebbeling
Minister of State
for
Community Charter and
2010 Olympic Bid

BRITISH COLUMBIA

20 November 2002

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The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An update

A report prepared for

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By

Inter*VISTAS* Consulting Inc.

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Synopsis

In January 2002, the B.C. Ministry of Competition, Science and Enterprise completed a study of the economic impact of hosting the 2010 Winter Olympic Games. This update was commissioned to a) review that study and make adjustments when appropriate, and b) update the study with more recent information on expected spending and revenues. The study focused only on the impacts in B.C. from spending which is funded from outside B.C. This is referred to as the incremental economic Impact of hosting the Olympics. Economic impacts due to B.C. financed spending were excluded.

This study found that the original study was generally thorough and conceptually valid. Some changes were made which reduced the impacts of the original study. Specifically:

- This update recognises that some visitors (such as those who stay with friends or relatives rather than in hotels) will spend less than the average tourist.
- This update excluded any tourism impacts earlier than 2008 and after 2015 in all but the high scenario, in order to be conservative.
- Transport investments were excluded from the incremental impacts.

Some changes were made which increased impacts somewhat:

- More recent data on Olympics spending increased impacts.
- Visitor spending by Canadians living outside B.C. was added in this study, whereas the original study had not included it.
- The use of discounted impacts was corrected. This study uses inflation adjusted spending to get real economic impacts.

The overall effect of these changes is to increase slightly the estimated impact of hosting the 2010 Winter Olympics. In terms of economic activity, as measured by incremental Gross Domestic Product, impacts for the medium-high scenario are:

- $2.1 billion in *direct* GDP.
- $3.3 billion in *total* GDP, including potential multiplier impacts.
- $8.4 billion in *total* GDP, if the impacts of expanding the Vancouver Convention and Exhibition Centre (VCEC) are also included.

Employment impacts are the creation of 55,000 *direct* person years of employment and 77,000 *total* person years. These impacts are spread throughout the 2008-2015 period (with peak incremental employment of 22,000 *direct* person years of employment in 2010). A total of 187,000 person years of employment may be created over a 30-year time period if the impact of the VCEC expansion project estimated in a separate study is included.

The above results are for the "medium-high" scenario, one of four scenarios included in the study. If the high scenario is considered, which posits higher and more lasting tourism impacts, then the total impacts are 99,000 total person years of employment (and $4.2 billion in total GDP) for the Olympics alone and 244,000 person years ($10.7 billion GDP) in total impacts if the effect of the VCEC expansion project are included.

Summary of the Study

Study Purpose

In January 2002 the British Columbia Trade and Investment Office of the Ministry of Competition, Science and Enterprise published the preliminary results of a study estimating the potential economic impact of the 2010 Winter Olympic and Paralympic Games in British Columbia.[1]

In January 2002, the British Columbia Trade and Investment Office produced a preliminary report on the economic impact of the 2010 Games.

In July 2002, the British Columbia Trade and Investment Office and the Bid Secretariat commissioned InterVISTAS Consulting Inc. (IVC) to update the preliminary study. The purpose of this update was twofold. First and foremost, the intention was to review and verify the economic impact concepts and methodology employed in the preliminary study. Second, new information that became available since the publication of the January 2002 report and needed to be incorporated into the model.

Reason for the update:

- *Review & adjust preliminary study*
- *Update model with new information*

The objective of the preliminary study was to address the question: What economic impacts funded by non-residents could flow to British Columbia as a consequence of hosting the Games? Hosting the 2010 Winter Olympic Games will generate spending on infrastructure to support the Games and attract visitors and spectators who will spend money in the province (what we have termed the *gross* impact). Some of this spending will come from British Columbia residents, (businesses and government) while some will come from outside the province which otherwise would not have been spent in the province. It is this latter impact, the *incremental* impact for the purposes of this study, that represents the bonus or reward to all British Columbians from the Games and is the focus of this report.[2]

Objective of both studies was to answer the question:

What economic impacts funded by non-residents could flow to British Columbia as a consequence of hosting the Games?

These are termed as the *incremental economic impacts* of the Games.

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[1] The economic impact model uses provincial multipliers for the British Columbia economy. The impact of the 2010 Games on the national economy would be larger in gross terms than the BC impact due to the additional indirect and induced effects outside of the province. The impact of the 2010 Games on the national economy in incremental terms would be smaller than the incremental impact in British Columbia. This is because some of the dollars that drive the incremental impacts in British Columbia will not be incremental to the national economy.

Verification of Approach and Methodology

InterVISTAS Consulting Inc. updated and made revisions to the parameters and structure of the January 2002 economic impact model.

InterVISTAS Consulting Inc. verified that the economic impact approach and methodology employed by the January 2002 study by British Columbia Trade and Investment Office was generally thorough and conceptually valid. Some revisions were made to the parameters and structure of the model. IVC updates and revisions to the model parameters include:

- New information on timing and costs of investments; and
- A generally more conservative approach to visitor projections and their expenditures.
- Transport investments were excluded from the incremental impacts.

The model structure was also revised. Significant changes include:

- Real 2002 values of investments and expenditures now drive estimation of economic impacts. The previous use of discounting values of investments and expenditures was unnecessary and inappropriate in the preliminary economic impact analysis.
- The provincial tax impact was revised to include British Columbia Corporate Income Tax.
- The economic impact model was augmented to compute the wage impacts.
- Several changes to the tourism parameters:
    - Delaying the start date of all incremental tourism impacts projections to 2008 for all scenarios except the High Visits scenario.
    - Differentiating between day and overnight visitor spending.
    - Differentiating between the spending patterns of "visiting friends and relatives" tourists and those that pay for accommodation.
    - Adding the impact of visits by Canadians from outside of British Columbia.

InterVISTAS Consulting Inc. provided the British Columbia Trade and Investment Office with a new version of the economic impact model. The new model can easily be updated to estimate the economic impact of the 2010 Winter Olympic and Paralympic Games as additional new information becomes available.

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[2] Note that the study was confined to economic impact – measuring how expenditure by visitors and for the construction program would generate jobs and contribute to gross domestic product. The study was not a cost benefit study – that is, it was not intended to address the question as to what the net balance would be between economic and social benefits from hosting the Olympics and the costs incurred. The study measures impacts, but was not intended to address the issue of return per dollar spent.

What is economic impact?

Economic impact is a measure of the spending and employment associated with a sector of the economy or a specific project (such as the construction of a new facility). The economic impact of the 2010 Olympic and Paralympic Games is generated by:

- Capital costs such as spending on construction and upgrades of Olympic facilities and transport infrastructure;
- Operating costs such as policing and broadcasting; and
- Spending by tourists visiting the province, and any impact on in-bound investment or trade.

Economic impact is ***not*** a "net measure" that weighs benefits against costs, but is useful in developing an appreciation of the benefits generated by new projects and investments.

Gross versus incremental economic impact. This study uses the terms *gross* and *incremental* economic impact. Gross economic impacts are the impacts on provincial GDP, employment and government tax revenues from all Games-related expenditures. Gross economic impact does not differentiate between expenditures by British Columbia residents, businesses and government and non-British Columbia residents, businesses and government. The incremental economic impact of the 2010 Games is generated by out-of-province expenditures only. As such, the incremental impact of the 2010 Olympic and Paralympic Games is smaller than the gross economic impact.

Components of economic impact. Whether gross or incremental, the *total* economic impact of the 2010 Games is the sum of direct, indirect, and induced impacts resulting from the Games-related spending. The *direct impact* can be attributed to purchases of Games organisers in the preparation and execution of the 2010 Olympic and Paralympic Games. *Indirect impacts* are felt in the goods and service industries that *supply* the industries that receive expenditures by Games organisers. *Induced impacts* are generated through expenditures of individuals employed indirectly or directly by Games expenditures.

More complete descriptions of gross, incremental economic impacts, as well as the components of economic impacts are provided in **Chapter 1** of this report.

Updated economic impact of the 2010 Games

The significant economic impact of the 2010 Winter Olympic and Paralympic Games is due to several factors. Most importantly, the Games provide a unique opportunity to raise international awareness of British Columbia, generating a long-term impact that will benefit many sectors of the provincial economy. Hosting the Games is expected to:

- Translate into higher volumes of visitors to British Columbia for *at least* two years prior and five years after the Games.
- Provide the opportunity to showcase British Columbia products and services to a broad international audience, promoting trade and investment activity.
- Create an enduring legacy through investments in sports facilities, cultural and sports endowment programs, social housing and major transportation infrastructure improvements.
- Stimulate increased international interest in Vancouver as a convention destination.

A successful bid for the 2010 Winter Olympic and Paralympic Games would be a major long-term stimulus for the British Columbia economy. The economic impacts of the Games, excluding the expansion of the Vancouver Convention and Exhibition Centre, were projected for four scenarios reflecting different levels of success in attracting visitors to British Columbia before, during and after the Games. For example, between 2002-2015, the Medium-High Visits scenario results in:

Direct economic impact of *Medium-High Visits scenario* (2002-2015):

- *55,000 person years of employment*
- *$1.9 billion in wages*

- *Direct* economic impact of the Games projected at $2.1 billion in gross domestic product and 55,000 person years of employment earning $1.9 billion in wages and salaries in British Columbia.[3]
- Including potential multiplier (indirect and induced) impacts, potential generation of $3.3 billion in *total* gross domestic product and 77,000 total person years of employment with wages and salaries of $2.6 billion for residents of British Columbia.[4]

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[3] A person year is the number of labour hours associated with one individual working full time for one year (roughly 1,825 hours per annum). Because some work, especially in construction and tourism, may be seasonal or part time, it is customary to express employment impacts in person years or full time equivalent (FTE) units. Thus, 55,000 direct person years of employment may reflect a greater number of jobs.

[4] The realisation of multiplier impacts depends on economic conditions and it is recommended that primary focus be placed on the direct impacts.

A comparison of the estimated total economic impacts (direct, indirect and induced combined) of the Games from the January 2002 economic impact model and the October 2002 model, for each of the four scenarios, is presented in **ES - 1**.

ES - 1: Comparison of Preliminary and Updated Total (Direct, Indirect and Induced) Incremental Economic Impact of 2010 Games

Tourism Impact Scenario	GDP	Employment (Person Years)	Fed Taxes	Prov Taxes	Local Taxes
Low Visits Scenario					
Preliminary	$1.6 Billion	37,000	$175 Million	$164 Million	$37 Million
Update	$2.0 Billion	45,000	$187 Million	$214 Million	$43 Million
Medium Visits Scenario					
Preliminary	$2.4 Billion	55,000	$288 Million	$265 Million	$57 Million
Update	$2.4 Billion	54,000	$242 Million	$268 Million	$52 Million
Medium-High Visits Scenario					
Preliminary	$2.8 Billion	67,000	$367 Million	$336 Million	$71 Million
Update	$3.3 Billion	77,000	$381 Million	$406 Million	$76 Million
High Visits Scenario					
Preliminary	$3.5 Billion	83,000	$467 Million	$426 Million	$89 Million
Update	$4.2 Billion	99,000	$513 Million	$538 Million	$99 Million

Source: The Economic Impact of the Winter Olympic and Paralympic Games: Initial Estimates (BCTIO, January 2002) and The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

The table includes both the preliminary and the updated estimates. While revisions to the tourism projections and spend parameters had a negative impact on all tourism scenarios, the positive impact of using *real* (rather than discounted) dollar expenditures more than made up for the reductions.

The scenarios differ in the tourism projections; the construction and operating costs and their impacts are the same in all four scenarios. The relative success of the Games in these scenarios will depend on the co-ordination and effectiveness of tourism and other marketing campaigns. The updated estimates of the total (direct plus multiplier) GDP impact range from $2.0 billion in the Low Visits scenario to $4.2 billion in the High scenario. The number of person years of employment generated ranges from 45,000 to 99,000.

> The net effect of IVC updates and revisions to the January 2002 model on the economic impact results was positive.

With the Vancouver Convention and Exhibition Centre

The planned Vancouver Convention and Exhibition Centre (VCEC) expansion adds another dimension to the economic impact of the 2010 Games. In addition to serving as the Media Centre while the Games are in progress, this facility should increase pre and post-Games external visitation. As such, expansion of the Vancouver Convention and Exhibition Centre would be highly beneficial in two regards:

- Meeting a critical facility need for the Games; and,
- Raising the capacity of Vancouver's convention facility so that a higher rate of growth in international delegates may be achieved in the pre and post-Games periods.

The economic impacts of the Vancouver Trade and Exhibition Centre expansion project in conjunction with 2010 Games were estimated in a separate study and reported in the Preliminary (January 2002) economic impact study. The total (direct, indirect and induced) incremental economic impacts of the expansion project are shown for three scenarios of tourism and delegate projections in **ES - 2**.

ES - 2: Incremental Economic Impact VCEC Expansion (Assuming 2010 Games)

	GDP	Employment (Person Years)	Federal Taxes	Provincial Taxes	Local Taxes
Low Scenario	$4.1 Billion	81,000	$453 Million	$430 Million	$86 Million
Moderate Scenario	$5.5 Billion	121,000	$618 Million	$581 Million	$116 Million
High Scenario	$6.5 Billion	145,000	$718 Million	$674 Million	$135 Million

Source: The Economic Impact of the Winter Olympic and Paralympic Games: Initial Estimates (BCTIO, January 2002)

IVC was not commissioned to review and verify these economic impact estimates. The estimates came from separate studies, commissioned by the private sector Vancouver Convention Centre Expansion Task Force and the federal Department of Western Economic Diversification, and reviewed by both KPMG and PricewaterhouseCoopers. Since the two studies are apparently mutually exclusive in scope, we believe that it is conceptually valid to add together the total (direct, indirect and induced)[5] incremental impact of the Games to the total incremental impact enabled for the Olympics by the VCEC expansion and have done so in **ES - 3**.[6]

ES - 3: Combined Impacts of Games and VCEC Expansion
Total (Direct + Indirect + Induced) Incremental Economic Impacts

	GDP	Person Years	Federal Taxes	Provincial Taxes	Local Taxes
Low Scenario					
Preliminary	$5.7 Billion	118,000	$628 Million	$594 Million	$123 Million
Update	$6.1 Billion	126,000	$640 Million	$644 Million	$129 Million
Difference	$0.4 Billion	8,000	$12 Million	$50 Million	$6 Million
% Change	7%	7%	2%	8%	5%
Moderate Scenario					
Preliminary	$8.1 Billion	182,000	$946 Million	$882 Million	$180 Million
Update	$8.4 Billion	187,000	$930 Million	$918 Million	$180 Million
Difference	$0.3 Billion	5,000	$(16) Million	$36 Million	$0 Million
% Change	4%	3%	-2%	4%	0%
High Scenario					
Preliminary	$10.0 Billion	228,000	$1,185 Million	$1,100 Million	$224 Million
Update	$10.7 Billion	244,000	$1,231 Million	$1,212 Million	$234 Million
Difference	$0.7 Billion	16,000	$46 Million	$112 Million	$10 Million
% Change	7%	7%	4%	10%	4%

Source: The Economic Impact of the Winter Olympic and Paralympic Games: Initial Estimates (BCTIO, January 2002) and The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

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[5] Total impacts were used rather than direct impacts, as the VCEC economic impact study only provides information on total impacts.

[6] The study of VCEC impacts produced three scenarios – low, moderate and high as shown in ES - 2. The Low Visits scenario for the Games was combined with low scenario for the VCEC; the High Visits scenario for the Games was combined with the high scenario for the VCEC; and, an average of the Medium and Medium-High scenarios for the Games was combined with the moderate scenario for the VCEC.

The tables that compare the economic results from the preliminary study and the update are provided in sequence for easy comparison in **Appendix C**.

Construction Program

The economic impact of hosting the 2010 Games can also be examined in terms of the impacts of the pre-Games construction program, as well as the tourism impacts – which accrue in the pre-Game, Game Year and post-Game time periods. First, we examine the construction impacts.

None of the expenditure required for the Vancouver Convention and Exhibition Centre expansion is included in the Games impacts – gross *or* incremental.

Three locations are proposed for Games events: Vancouver, Whistler and the Callaghan Valley. The Games construction program will involve building essential sports and communications facilities in these three locations, as well as housing in Whistler and Vancouver, to host a successful event. It also requires for investment in the transportation infrastructure to ensure efficient and quick movement of athletes, officials, media, volunteers and spectators between the venues.

Facilities. Some upgrades and renovations of existing facilities such as GM Place and the Vancouver Convention and Exhibition Centre will be required.[7] Other facilities will be constructed for the Games. Most new facilities, including sport facilities and accommodation, will have immediate and high use after the Games.

Transportation improvements. A number of improvements to the Lower Mainland transportation system are considered in the construction costs including upgrading the Sea-to-Sky highway. To provide access to the remaining Olympic and sport events that will take place at Whistler and in the Callaghan Valley, many improvements on the Sea-to-Sky Corridor are under consideration. In Fall 2002 a decision will be made as to which of the options will be pursued.

Incremental construction impact includes:

- *None of the investment in transport improvements*
- *50% of total venue construction spending*

What is included in our estimates of incremental construction economic impact? Only construction expenditures funded by out-of-province sources are included in the "incremental" economic impact. Overall, only 9 percent of the construction costs are considered incremental (i.e., 91 percent is funded by the private sector within British Columbia and by the provincial government):

- *None* of the expenditure required for the Vancouver

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[7] The impact of the exhibition centre expansion is not included in the Games model results presented here. The economic impact of the Vancouver Convention and Exhibition Centre expansion reported in the BCTIO January 2002 Olympic economic impact study is added to the Games impacts in Table ES - 3.

Convention and Exhibition Centre expansion is included in the Games impacts – gross or incremental.

- *None* of the investments in improvements such as the Highway 99 upgrade and the Lower Mainland Rapid Transit are included in the incremental construction economic impact.
- Only 50 percent of the Olympic venue construction is included in the incremental economic impact (half is funded by the provincial government).

The resulting construction impacts are presented in **ES - 4**. The impacts of the construction program are the same in all four scenarios examined - only the tourism impacts differ between the scenarios. The incremental impacts of construction are funded by federal dollars. Therefore there are no incremental federal tax revenues. Federal tax revenues resulting from federal government spending are not incremental to the federal government.

ES - 4: Incremental Economic Impact of Construction

	GDP	Person Years	Wages	Federal Taxes	Provincial Taxes	Local Taxes
Direct	$148 Million	3,000	$115 Million	-	$7 Million	$2 Million
Indirect + Induced	$87 Million	2,000	$50 Million	-	$10 Million	$3 Million
Total	*$235 Million*	*5,000*	*$165 Million*	-	*$17 Million*	*$5 Million*

Source: The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

Impact of Games from visitors and tourists

Before, during and after the Games

Visitor volumes to the region hosting Olympic Games typically increase during the two years prior to the Games. This is due to Games organising activities and individual special events, such as World Championship events. As well, the "Olympic effect" on tourism should play a major role in the enduring economic impact of the Games and maintaining the employment created in the provincial tourism industry.

Direct economic impact of visitors in the *medium-high* scenario:

- *39,000 person years of employment*
- *$1.3 billion in wages*

Increases in international visitation are projected for 2 years prior and 5 years after the Games in the low, medium and medium-high scenarios considered. The high scenario includes impacts more than beyond 5 years beyond the event and 7 years prior. Post-Games visitors are enticed by the heightened international awareness created by the tourism marketing program, international media coverage of the province during the build-up to the Games, coverage of the Games event and new sporting facilities. Transport infrastructure improvements facilitate such growth in external tourism. The economic impact attributable to visitors and tourists before, during and after the Games in all four scenarios is presented in **ES - 5**.

ES - 5: Incremental Economic Impact of Games Visitors and Tourists

Tourism Impact Scenario	GDP	Employment (Person Years)	Wages	Fed Taxes	Provincial Taxes	Local Taxes
Low Visits Scenario						
Direct	$586 Million	16,000	$547 Million	$111 Million	$100 Million	$11 Million
Indirect + Induced	$334 Million	6,000	$201 Million	$26 Million	$36 Million	$12 Million
Total	*$920 Million*	*22,000*	*$748 Million*	*$137 Million*	*$136 Million*	*$23 Million*
Medium Visits Scenario						
Direct	$824 Million	23,000	$769 Million	$155 Million	$140 Million	$16 Million
Indirect + Induced	$471 Million	9,000	$285 Million	$36 Million	$50 Million	$17 Million
Total	*$1,295 Million*	*32,000*	*$1,054 Million*	*$191 Million*	*$190 Million*	*$33 Million*
Medium-High Visits Scenario						
Direct	$1,419 Million	39,000	$1,323 Million	$268 Million	$242 Million	$27 Million
Indirect + Induced	$809 Million	15,000	$487 Million	$62 Million	$86 Million	$29 Million
Total	*$2,228 Million*	*54,000*	*$1,810 Million*	*$330 Million*	*$328 Million*	*$56 Million*
High Visits Scenario						
Direct	$2,001 Million	56,000	$1,867 Million	$374 Million	$338 Million	$38 Million
Indirect + Induced	$1,144 Million	21,000	$692 Million	$88 Million	$122 Million	$42 Million
Total	*$3,145 Million*	*77,000*	*$2,559 Million*	*$462 Million*	*$460 Million*	*$80 Million*

Source: The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

A marketing plan and resources are needed to achieve pre and post-Games tourism growth

One of the key benefits a host region can reap from the Olympics is greater international exposure, which can translate into increased visitation if marketing opportunities are developed. The tourism marketing challenges for British Columbia are:

- Capitalising on pre-Games build-up;
- Building on momentum in the immediate post-Games period; and
- Raising adequate funding to do so.

These benefits will not materialise automatically. They must be earned by a focused, adequately funded and skilfully executed marketing program. The first step for British Columbia's tourism industry is to develop a long-term marketing plan to capitalise on each opportunity to raise international awareness, beginning with the host city selection in 2003. Up to this point, the success and funding of the marketing program has been assumed, therefore the second step is to define and secure appropriate resources to activate the plan.

Up to this point in the analysis, the success and funding of the marketing program has been assumed, therefore it will be necessary to define and secure appropriate resources to activate the marketing plan.

A committee – Tourism 2010 – has been formed to develop a long-term strategic tourism marketing plan for the province. The committee comprises Tourism Vancouver, Tourism Whistler, Tourism Victoria, Tourism Richmond, Tourism British Columbia and the Canadian Tourism Commission. These tourism organisations must work together to ensure marketing dollars are well-spent to maximise opportunities. In addition, the tourism industry must work in partnership with Olympic sponsors, television broadcast rights holders, the media and the Olympic movement to leverage funds and maximise the tourism opportunities presented by the Games. In addition to the need for partnerships and co-ordination, there is also a need for sufficient levels of funding to support the marketing effort.

The tourism projections in this model depend on the assumption of coordinated and successful tourism marketing. Further analysis should be undertaken to ascertain the level of coordination and funding that will be necessary to achieve the success marketing on which the tourism economic impact is computed.

Olympic Legacy

Infrastructure legacy

The Olympic Legacy may generate significant benefits for residents and businesses in British Columbia.

These benefits are not included in the economic impact estimates reported in this study.

The new facilities and venues for the Games remain for the benefit of British Columbians afterwards. The benefits of the infrastructure legacy include:

- Olympic venues will allow Vancouver to bid on high level sporting, political or cultural mega-events.
- Sports facilities will expand training opportunities for British Columbia's aspiring athletes and future Olympians and increase recreational opportunities for all.
- Athletes Villages will alleviate some of the need for social housing in Vancouver and employee housing in Whistler.
- A Legacy fund to pay for future operating costs of the facilities.
- Enhanced infrastructure to support expanded winter tourism.

Tourism legacy

The attention drawn to the province is expected to increase tourism in the years immediately following the Games. The records of other host regions suggest that tourism should be at higher levels for five years after the Games. This outcome will depend on appropriate levels of marketing commitment, co-ordination, imagination and investment. The high level of repeat tourism in British Columbia suggests that the 5-year post-Games impact assumed in the model may be conservative.

Other benefits

Investment and Trade. The attention drawn to Vancouver by hosting the Olympics creates an opportunity to increase exports and attract new business investment. Salt Lake City, Sydney and Atlanta created marketing teams to use the Olympic cachet to market local products and to pitch potential investors on the merits of their communities. Both have been successful in attracting new businesses to their regions.

Recreation and transport benefits. Residents and visitors both enjoy sport and cultural events induced by new recreational facilities. Residents and visitors benefit from time-savings due to improved transportation infrastructure, the completion of which may be accelerated by the Games.

Intangibles. The Games will also be a source of non-tangible legacy benefits as they contribute to national spirit, confidence, hope, pride and sense of achievement. This will be especially true for the 30,000 or more volunteers that contribute their valuable time during the Games.

Magnitude of the Impacts Relative to the British Columbia Economy

Medium-High Visits scenario:

- *4,200 direct PYs created on average each year for 13 years.*
- *A reasonable expectation in relation to current size of effected industries.*

Consider the magnitude of the impacts resulting from the Medium-High Visits scenario. In this scenario, the 2010 Olympic Games are expected to generate 55,000 direct person years of employment (PY) over a 13-year period. This represents roughly 4,200 direct PYs on average each year, although the employment impacts vary from year to year. In relation to the existing employment bases of the affected industries, an annual employment impact of 4,200 direct PYs per year seems reasonable. For example, tourism currently accounts for 110,000 jobs in British Columbia. If all of the annual employment impacts were created in the tourism industry, the new employment would represent a level of annual growth of less than 4 percent. Similarly, British Columbia's construction industry currently supports roughly 112,000 jobs. Even if all of the direct employment impacts in the years prior to 2010 were concentrated in the construction sector, in our view the total employment growth would not be an unmanageable leap. Based on these comparisons, we find the magnitude of the updated economic impact results credible and achievable.

Conclusions

There are two main conclusions to draw from this analysis of the economic impact of the 2010 Winter Olympic Games:

- The Games provide a real opportunity for long-term provincial economic development to be funded by sources external to the province; and
- It is necessary to commit investment dollars and other resources to the Games effort to achieve the projected results.

Main Report

1.0 Introduction

In January 2002 the British Columbia Trade and Investment Office (BCTIO) of the Ministry of Competition, Science and Enterprise published the preliminary results of a study estimating the potential economic impact of the 2010 Winter Olympic and Paralympic Games in British Columbia.[8] The study was confined to economic impact – measuring how expenditures by visitors and Olympic organisers would generate jobs and contribute to gross domestic product. The study was not a cost benefit study – that is, it was not intended to address the question as to what the net balance would be between economic and social benefits from hosting the Olympics and the costs incurred. As such, the study measures economic impacts, but was not intended to address the issue of return per dollar spent.

In July 2002, the BCTIO and the Bid Secretariat commissioned InterVISTAS Consulting Inc. (IVC) to review and update the preliminary study. The purpose of this update was twofold. First and foremost, the intention was to review and verify the economic impact concepts and methodology employed in the preliminary study. Second, IVC incorporated new information that has become available since the publication of the January 2002 report.

This introductory chapter provides some descriptions of the basic concepts of economic impact used in the report and presents an outline of the report.

1.1 What is economic impact?

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project (such as the construction of a new facility), or a change in government policy or regulation. Economic impact can be measured in various ways. Two of the most popular ways to assess economic impact are in terms of the dollar value of industrial output produced and person years (PYs) of employment generated. Other measures include value-added (GDP) and value of capital used and/or created. All of these describe the gross level of activity or expenditure in a sector of the economy or from a specific project or a change in policy or regulation. As such, they are not "net" measures that weigh benefits against costs, but these measures can be useful in developing an appreciation of the benefits generated by projects, investments and economic sectors.

Economic impact is a measure of the spending and employment associated with a sector of the economy or a specific project, *not* a net measure of benefits and costs.

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[8] The economic impact model uses provincial multipliers for the British Columbia economy. The impact of the 2010 Games on the national economy would be larger in gross terms than the BC impact due to the additional indirect and induced effects outside of the province. The impact of the 2010 Games on the national economy in incremental terms would be smaller than the incremental impact in British Columbia. This is because some of the dollars that drive the incremental impacts in British Columbia will not be incremental to the national economy.

1.1.1 Employment impact

The total employment impact is the sum of direct, indirect, and induced employment.

Direct employment is employment that can be attributed to the preparation and execution of the 2010 Olympic and Paralympic Games. In the pre-Games period, this includes the employment generated by the construction program and the employment supported in the local tourism industry. During the Games, the operating expenditures and expenditures by visitors who attend the Games generate direct employment in various provincial industries. After the Games, additional out-of-province tourism is induced by the heightened profile of British Columbia as a result of the Games and supports direct employment in the tourism sector.

The total employment impact is the sum of *direct*, *indirect*, and *induced* employment.

Indirect employment is employment in goods and service industries that *supply* the industries that receive direct expenditures because of the Games. Some examples of indirect employment supported by the Games would include:

- Firms that supply raw materials to signage companies that are in turn commissioned by Olympic organisers;
- Machinery leasing companies or raw material wholesalers which supply the construction firms that build the transportation infrastructure necessary for the event; and
- Food wholesalers which supply hotels and restaurants that serve Games spectators.

As such, indirect employment is generated in industries that supply or provide services to businesses that produce the *final* goods and services purchased over the course of the Games.

Induced employment is employment generated through expenditures of individuals employed indirectly or directly by Games expenditures. For example, if an employee of the telecommunications firm that wins the contract for the International Media Centre decides to expand or re-model his/her home, this would result in additional (induced) employment hours in the general economy. Specifically, the home renovation project would support hours of induced employment in the construction industry, the construction materials industry, etc.

1.1.2 Economic output and gross domestic product

In addition to employment, the two most common measures of economic contribution are *economic output* and *gross domestic product (GDP).* Economic output roughly corresponds to the *gross* revenues of goods or services produced by an economic sector or industry. GDP only measures *value-added* revenues from labour and capital. As such, GDP removes the revenues to suppliers of *intermediate* goods and services. Alternatively, economic output adds all revenues at each stage of production together as a measure of total production in the sector or industry. Economic output will always be greater than GDP (also termed as *value-added*).

Economic output and GDP impacts are classed as direct, indirect and induced in accordance with the employment impact.

1.1.3 Incremental versus gross economic impact

This study continues to use the terms *gross* and *incremental* economic impact employed by the original author.[9] Gross economic impacts are the impacts on provincial GDP, employment and government tax revenues from all Games-related expenditures. This includes infrastructure expenditures related to the Games and expenditures motivated by Games-related marketing (such as tourism) from all sources (e.g. in-province, other Canada and international). There are many groups that contribute to the gross expenditures, including but not limited to:

- Games co-ordinators, including the OCOG and non-OCOG groups;
- Federal, provincial and local governments;
- Media representatives;
- Athletes and coaches;
- Spectators including Lower Mainland residents, other British Columbia residents and visitors from elsewhere in Canada and International origins.
- All others participating in the Games.

Gross economic impact does not differentiate between expenditures by British Columbia residents, businesses and government and non-British Columbia residents, businesses and government.

The incremental economic impact of the 2010 Games is generated by expenditures sourced from outside of British Columbia only. Part of the Games incremental economic impact is from spending by visitors from outside of British Columbia as well as spending by British Columbia residents that would have, if not for the Games, left the province for vacation. The rest of the Games incremental economic impact in British Columbia is expected to be generated by federal government spending in British Columbia and investment from other out-of-province sources. Expenditure and investment by British Columbia residents and government is not considered part of the incremental impact because it is assumed that this money would be spent on other activities in British Columbia if the Games were not hosted. Therefore, the incremental economic impact of the Games represents an injection into the provincial economy, generating additional GDP, employment and tax revenue from dollars originating outside of the province.

> The incremental economic impact of the 2010 Games is generated by expenditures sourced from outside of British Columbia only.

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[9] Incremental is not a term commonly used to refer to out-of-province funded expenditures. It is not a term that InterVISTAS Consulting would choose but we continue to refer to incremental impacts for the sake of continuity with the original study.

Gross impacts are a useful description of the overall economic impact of the Games. However, it is the incremental impact that helps determine to what extent hosting the Games will stimulate the provincial economy. The economic impact model produces estimates of both *gross* and *incremental* economic impacts but only the incremental economic impacts are presented in the main findings.

1.2 Organisation of report

A great deal of work has already been completed in estimating the economic impact of the 2010 Olympic Games by the British Columbia Trade and Investment Office (BCTIO) of the Ministry of Competition, Science and Enterprise. The BCTIO collected and surveyed a substantial body of research covering:

- recent summer and winter Olympic Games with respect to official reports, economic impact studies, marketing strategies, tourism statistics;
- the economic impacts of hallmark events;
- other sport tourism; and
- highway impacts.

As well, the BCTIO built a model that estimates gross and incremental present value economic impacts resulting from the Games by:

- Utilising cost and revenue estimates from the 2010 Bid Corporation;
- Projecting Games-related tourism and tourism spending; and
- Applying economic multipliers produced by the 2001 British Columbia Stats Input Output model.

This update of the January 2002 report reviews the logic and operation of the economic impact model and identifies and makes necessary adjustments. This report also provides discussion on a number of supplemental issues that have arisen concerning the analysis presented in the preliminary report. This update is organised into two parts.

This update of the January 2002 report reviews the logic and operation of the economic impact model and identifies and makes necessary adjustments.

Part 1 – Economic Impact Model Review. This part of the report is to review the logic and data employed in the economic impact model created by the British Columbia Trade and Investment Office. Specifically, whether the model captures and isolates the incremental economic impact of the Games.

This section contains two chapters. *Chapter 2* reviews the non-tourism aspects of the model and *Chapter 3* focuses only on tourism. In both chapters, a description of the original model is followed by a list of revisions that have been undertaken in the updated model.

Part 2 – Economic Multipliers and Updated Impacts. This part of the report contains three chapters. *Chapter 4* reviews the updates to the economic multipliers applied to the Games-related expenditures. The appropriate use of economic multipliers and the limitations of multiplier analysis are explained. In *Chapter 5* the direct, indirect and induced incremental economic impacts of the 2010 Olympic Games generated by the updated model are presented. *Chapter 6* provides discussion and analysis of several supplemental issues including:

- the potential increase in the provincial price level that might result from the pre-Games construction program;
- the potential for interprovincial labour migration to reduce the economic impact of the Games in British Columbia;
- the potential for the Games to be a factor influencing British Columbia's level of international trade and investment; and,
- the value of user benefits that could accrue from the transportation infrastructure improvements proposed in the pre-Games construction program.

Chapter 7 provides conclusions resulting from the economic impact study.

Appendices provide supplemental background and analysis.

PART I: Economic Impact Model Review

2.0 Non-Tourism Impacts – Data and Methodology

For the preliminary report, a spreadsheet-based (Microsoft Excel) economic impact model was developed to estimate the economic impact of the 2010 Winter Olympic and Paralympic Games in British Columbia. The model was designed to capture the capital and operating costs of the Games, as well as projected tourist expenditures over the 20-year period spanning the Games. The model formulation, parameters and spreadsheet calculations were reviewed. The findings of this review with respect to non-tourism aspects of the model are presented in this chapter.

2.1 Overview of the original economic impact model

The review of the original model was conducted by creating a new, parallel spreadsheet model to check the computational accuracy of the results from the original model. Through this, a number of computational errors were identified and corrected. These errors were minor and had little impact on the overall findings. Subsequent adjustments to the parameters and model structure were made in the new model to ensure that it was properly calculating incremental impacts. A copy of this model has been provided to the client along with this report.

The review of the original model was conducted by creating a new spreadsheet model.

The economic impact of the 2010 Games is generated by three main sources of expenditures:

- **Organising Committee for the Olympic Games (OCOG) costs** – direct capital and operating costs related to the Games, e.g. construction of sport venues and athlete's village, security, transportation.[10]
- **Non-OCOG costs** – capital and operating costs for services and infrastructure to support the Games and spending by broadcasting companies on equipment.
- **Visitor and tourist spending** – expenditures by spectators to the Games, spending by media, officials, sponsors and athletes at the Games plus other visitors induced before, during and after the Games. These visitors and tourists are attracted to British Columbia as a result of the publicity from the Games and the assumed financing and success of a tourism marketing strategy. The model contains a number of future visitor scenarios predicting the number of external tourists visiting British Columbia. Visitor and tourist spending is discussed in detail in **Chapter 3**.

Estimates of these costs and expenditures are contained in the original model, spread out over the 2001-2020 time frame, as they are expected to occur. Select cost data had been adjusted to take account of expenditures on imports and these adjustments are discussed below. The real (2002) costs and expenditures were totalled for each year and a discount rate was applied to produce a *net present value* (NPV). In the original model, the discounted values from each year were summed to produce a single aggregate expenditure figure in 2002 dollars.

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[10] While an expanded Vancouver Exhibition and Convention Centre would be used as a Games venue, the cost of the expansion is not included in the economic impacts estimated in this report. The results of a separate study that estimated the economic impact of the expansion are added to this study's results in **Chapter 7 – Conclusions**.

The original model contains a schedule of percentage shares by which expenditures were allocated across their respective industries. For example, visitor expenditures were allocated among accommodation, food and beverages, retail, and transportation industries. OCOG and non-OCOG costs were distributed among construction, furniture and fixtures and other related industries. The original model also contains industry specific economic impact multipliers, derived from the British Columbia Input-Output model, to apply to expenditures in each industry to calculate GDP, employment and tax impacts. The schedule of percentage shares is provided and the procedure for applying economic impact multipliers is further explained in **Chapter 4.**

Some of the OCOG, non-OCOG and visitor expenditures indirectly purchase goods and services produced outside of British Columbia. The expenditure on imported goods and services is referred to as *leakage*. These dollars do not contribute to the British Columbia economy and need to be excluded from the overall economic impact. The economic impact multipliers from the British Columbia Input-Output Model already allow for the amount of leakage that has been observed historically in each industry. However, some projects associated with the Olympics are expected to have "extraordinary" leakage that exceeds the historically observed norm. For example, the skills and equipment required to build a bobsled track may not be available in British Columbia so may have to be imported. Both gross and incremental impacts were adjusted in the original model for extraordinary leakage.

2.2 OCOG costs

The OCOG incurs both capital and operating costs from staging the 2010 Games.

2.2.1 Capital costs

The OCOG is responsible for upgrading or constructing the sporting facilities to be used during the Olympics, building the athletes villages and the media centres. The OCOG capital investments are concentrated in the period between 2005 and 2010. Some of these capital investments commence in 2005. Nearly all the investments are completed by 2009.

OCOG costs:

- *$620 million in capital, 50% incremental*
- *$1.3 billion in operations, 82% incremental*

The OCOG capital cost estimates have been provided by the 2010 Bid Corporation and total $620 million in 2002 dollars. Fifty percent of these costs are assumed incremental to British Columbia – i.e., half will be funded by the federal government (incremental to British Columbia), half by the province (not incremental to British Columbia but gross). We note that the original economic impact model does not assign a value to extraordinary leakage from OCOG capital expenditures despite the specialised nature of some of the facilities.

2.2.2 Operating costs

The OCOG is expected to cover all of their Games operating costs ($1.3 billion) with the portion of Games revenues generated by sources external to British Columbia. As such, eighty-two percent of those costs are incremental (further details on funding are provided in **Section 2.4**). The Games operating costs covered by the OCOG include accommodation, transport, general administration, host broadcasting, telecommunications, race timing, fund-raising, marketing and the Legacy Fund among other things. To the extent that the portion of Games revenues from external sources exceed the Games operating costs, provincially funded OCOG capital costs contribute to the incremental economic impact of the Games.

2.2.3 Changes and recommendations

In the new model, the amount and timing of the OCOG capital and operating costs have been updated with the latest figures from the 2010 Bid Corporation. Capital costs have increased by 28 percent from previous estimates, operating costs have increased by 11 percent.

Update included:

- *Incorporating latest figures from the 2010 Bid Corporation*
- *Increasing import content in construction*
- *Cross-checking for double-counting*

Although the original model made no estimate of extraordinary leakage from the OCOG capital costs, it is reasonable to expect that a project of this nature would have a higher import content than those historically observed by British Columbia Stats. Based on our knowledge and experience, we have assumed a proportion of extraordinary leakage such that $1 million in expenditures in non-residential and road construction industries generates approximately four full-time equivalents of employment.[11] The impact figures presented in **Chapter 5** are calculated using this assumption.

The OCOG and non-OCOG costs were cross-checked to ensure that no double counting has occurred. For example, we checked that none of the OCOG capital costs were also included in the non-OCOG costs. Broadcast spending was examined to ensure that it did not include media visitor spending which is reported separately. Similarly, shared financing of athletes village construction was investigated. No such double counting was detected.

[11] The published non-residential construction multipliers generate 8.73 FTEs per $1 million spent and the road construction multipliers generate 10.27 FTEs.

2.3 Non-OCOG costs

The provincial government provided estimates of the non-OCOG capital and operating costs.

2.3.1 Capital costs

Non-OCOG capital costs consist of upgrades to Highway 99, improvements to Lower Mainland urban transportation and miscellaneous facilities relating to the Games. In the original economic impact model, the total capital costs were $3.0 billion in 2002 prices, of which 10% were presumed incremental to British Columbia. The majority of the capital costs were assumed to be funded by the provincial government and the provincial private sector. In the original model, an extraordinary leakage amounting to 20 percent was only assumed for the $1.3 billion expenditure on the Lower Mainland transportation investment.

2.3.2 Operating costs

The non-OCOG operating costs are concentrated prior to and during the Games year. The two largest components of these costs are customs, immigration and policing services and broadcast spending at $175 million and $56 million respectively, in 2002 dollars. The operating costs total $237 million and occur between 2008 and 2010, inclusive. In the original model, 56 percent of the non-OCOG operating costs were expected to be incremental to British Columbia based on the 1998 Bid Book and the BCTIO's working assumptions about the sources of funding broadcast funding.[12]

2.3.3 Changes and recommendations

Update included:

- *Incorporating most recent estimates from the 2010 Bid Corporation*
- *Increasing import content in construction*
- *Cross-checking for double-counting*
- *Removing transport investment from the incremental impact*

In the new version of the model, the costs have been updated to reflect the most recent estimates from the provincial government. Since the original economic impact model was developed, the estimated cost of the non-OCOG transportation improvements has declined by approximately $600 million down to $2.5 billion. Extraordinary leakage from non-OCOG capital costs was amended in the same manner as the OCOG capital costs. To be conservative it is assumed that federal funding for transportation initiatives will be forthcoming even if the Olympic bid is not won. Therefore, the federal expenditure on transport investments is not considered incremental.

The BCTIO's assumptions about the sources of broadcast and signage funding are reasonable and based on the experiences of past Olympic hosts. Sources of funding from past Olympics have been well documented.

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[12] Eighty percent of the broadcast cost is assumed to accrue to the U.S. holder of broadcast rights for North America.

2.4 Games funding

The original model contains information on the sources of funding to cover the OCOG and non-OCOG costs. The figures were taken from the 1998 Bid Book (1998 prices) and are factored up to 2002 prices in the model. The figures for revenues covering OCOG costs have been updated using estimates from the Bid Corporation provided on September 18, 2002 and are presented in **Table 1**. These figures are still provisional and may be subject to change. The table also gives the percentage share of total revenues attributable to in-province sources. The assumed British Columbia content percentages were estimated by the British Columbia Trade and Investment Office, based on previous hosts' experiences and the characteristics of the provincial economy. For example, 70 percent of ticket sales are assumed to be to British Columbia residents, so only $54 million (or 30 percent) of the $180 million in ticket sales is incremental.

> Out-of-province sources are expected to generate 71% of the total Games revenue.

Table 1: Projected OCOG Revenue

	Estimates in $2002 (millions)	**Assumed Out-of-Province Content**	**Incremental Revenue (millions)**
Ticket Sales	180	30%	54
Corporate Sponsorships			
TOP Program	137	70%	96
Joint Marketing Program (COA)	400	90%	360
Total	*537*		*456*
Government			
Canada	310	100%	310
British Columbia	310	0%	0
Total	*620*		*310*
Broadcast Rights	546	99%	541
Commercialisation			
Licensing Fees	24	50%	12
Merchandise & Concessions	19	20%	4
Total	*43*		*16*
Other Revenue	9	50%	5
Total	**1,935**	**71%**	**1,381**

Source: 2010 Bid Corporation, September 2002.

The incremental funding is applied to Games costs. Costs funded by the provincial government and businesses based in British Columbia only contribute to the gross economic impact; only costs covered by the federal government and out-of-province companies or individuals are included in the incremental impacts. For example, if a project is half funded by the federal government and half funded by the provincial government, only half the costs of that project are assumed to be incremental.

2.4.1 Changes and recommendations

The new version of the model reflects changes in the expected revenue from government funding (federal and provincial to provide $310 million each) and private sector funding. These revenue projections have been updated to the latest figures from the Bid Secretariat. The provincial and federal governments are expected to fund all the OCOG capital costs while revenues from the Games fund the operating costs. Most of the non-OCOG capital costs are funded by the private sector which is assumed to be from in-province sources and therefore not incremental. We note that the provincial *Partnerships B.C.* initiative to foster public-private partnerships, is expected to generate further incremental economic impacts by 2010.

Revenue projections have been updated to the latest figures from the Bid Secretariat.

2.5 Discounting

In the original model, the costs and expenditures were discounted to produce a net present value figure upon which economic impacts were calculated. This approach is required in cost benefit studies. The discount rate used in the original model is the provincial government's real average long (30 year) bond rate of 4.5 percent.

The new model does not base economic impacts on discounted values. It is not appropriate to discount costs and expenditures to present values in economic impact analysis; economic impact analysis is not cost benefit analysis. The updated results presented in this report have not been discounted.

It is not appropriate to discount costs and expenditures to present values in economic impact analysis.

3.0 Tourism and Visitors – Data and Methodology

The economic impact models (original and new) distinguish between tourists and visitors. *Tourists* are individuals that come to British Columbia from international destinations because of the Games; either to attend Games related events or subsequent sporting events in Olympic facilities or because of the additional exposure the Olympic cachet lends to tourism marketing efforts. *Visitors* is a more diverse group including athletes, officials, media, sponsors and other Games organisers that come to British Columbia, as well as residents of British Columbia that come to the Lower Mainland, to attend events.

In the original model, the Games-induced visitation comprises four groups:

- **Resident Visitors** – residents of British Columbia visiting the Games who require paid overnight accommodation (i.e., are from outside the Lower Mainland and Whistler).
- **Resident Spectators** – residents of the Lower Mainland and Whistler who are spectators at the Games and do not require overnight accommodation.
- **External Visitors** – athletes, media, officials and sponsors that attend the Games.
- **External Tourists** – international tourists who visit the Games, or whose visits to British Columbia are induced by the Games publicity or the tourism marketing that is levered by the Games.

The greatest contribution to the economic impact of the 2010 Olympic and Paralympic Games is expected to result from external tourists. However, both tourists and visitors through their expenditures increase demand for output from many provincial industries that make up the *tourism sector*. Total expenditure is calculated as the product of the total number of tourists and visitors, the spending per day, and the length of stay.

First, a review and an assessment of the external tourism projections from the original model are provided. Second, this chapter describes the difference between incremental and gross visitor and tourist spending and how each is calculated. Revisions that have been incorporated in the new version of the model are explained and other recommendations are put forth in each section.

> Total visitor and tourist expenditures are calculated as the product of the total number of tourists and visitors, the spending per day, and the length of stay.

3.1 Review of external (international) tourism projections

In the original economic impact model, the total external (i.e., international) tourists per annum were projected using four growth scenarios. All scenarios project additional international tourists[14] in the pre and post-Game periods *induced* by the 2010 Games. These scenarios were matched with resident (i.e., British Columbia residents) visitor projections to compute the economic impacts of Low, Medium, Medium-High and High growth scenarios.

Adequate financing and the success of British Columbia's tourism marketing organisations are implicit in each scenario.

Adequate financing and the success of British Columbia's tourism marketing organisations (Tourism BC, Tourism Vancouver, Tourism Whistler, Vancouver Coast & Mountains, with support from the Canadian Tourism Commission) are implicit in each scenario. The most aggressive scenario also assumes that co-ordinated, co-operative efforts between tourism organisations are underway as early as 2003.

3.1.1 Basis for the projections in the original model

Tourism projections were formed by:

- *examining available data*
- *eliciting expert opinion*

The British Columbia Trade and Investment Office created the tourism projections in the original economic impact model by examining available data and eliciting expert opinion on the British Columbia tourism industry. Specifically, the growth in international tourism in British Columbia, Alberta and Norway surrounding Expo86, Calgary '88 and Lillehammer '94 were considered. The experiences of Alberta (+3 percent growth per annum on average in international visitation between 1989-1993) and Norway (+57 percent between 1989-1994) suggest that it is reasonable to expect that British Columbia will experience significant gains in post-Games and pre-Games visitation as a result of Games exposure. No single tourism profile was used as the prototype for the international visitor projections in the January 2002 model, however. It was recognised that no set of data was directly comparable to British Columbia in terms of the level of existing international tourism, access to markets and the strengths of the tourism product. [15] Hence, the tourism growth "profiles" surrounding other events provided guidance in determining the *shape* of the 2010 international tourism projections, in terms of the lead up, peak and tail of the induced tourism, but did not determine their magnitude.

In consideration of the British Columbia tourism produce, "bad" and "best" scenarios for induced tourism were constructed on a year by year basis and following the pattern suggested by the increases in tourism surrounding other major events. After establishing the upper and lower bounds of induced tourism, variations of each were created by adjusting assumptions about the state of the market and the effectiveness of the marketing campaign. The opinions of tourism industry experts were requested and considered during this process.

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[14] Non-BC Canadian tourists were not included in the original analysis but have been included in the update – see section 3.2.5.

[15] For example, international visitation to Alberta in 1988 was 30 percent greater than in 1984. However, the 30 percent increase represented moderate numbers on a small base of tourism. Hence this experience is not the model for British Columbia, having a large base tourism of international tourism.

The cumulative international tourist figures projected in the four scenarios of the original model are presented in **Table 2**. In each year of every external tourist scenario, the number of external tourists projected was computed as a *percentage* of total external (international) visitors to British Columbia in 2000.[16] In the original model, the Statistics Canada estimate of 8.5 million external (international) visitors to British Columbia in 2000 was used as a benchmark for the Olympic international tourism projections.

Table 2: Cumulative Olympics-Induced International Tourists Four Scenario (Original Model)

Scenario	Olympic Induced International Visitors	Start/End Year
Low Visits	+933,838	2007-2014
Medium Visits	+1,908,389	2002-2015
Medium-High Visits	+2,502,109	2007-2015
High Visits	+3,658,347	2002-2020

Source: January 2002 Economic Impact Model.

3.1.2 Changes, comments and recommendations

Change to the base tourism number. On the advice of Tourism BC, the figure for international visitors to British Columbia in 2000 from Statistics Canada was replaced in the model. Statistics Canada 8.5 million figure for international visitation to British Columbia in 2000 was replaced with Tourism BC's estimate of 10.0 million international visitors. Since the projections are a function of this baseline tourism figure, the projections have all increased proportionally.

The projected tourism impacts are viewed as modest. IVC was not asked to generate new external tourist projections; rather we were asked to review them and to perform a "reality check" on the outcome. IVC views the methodology used to form the external tourism projections in the original economic impact model as reasonable. IVC acknowledges that the tourism projections were constructed in a subjective manner rather than rigorous statistical methods, but we also recognise that they were made in consideration of the available data and in consultation with experts. We further note that the number of additional external tourists generated by the projections on an annual basis, as well as in total, is modest. As such, IVC views the conservative magnitude of the results in the preliminary report as reasonable. If British Columbia wins the 2010 Games, we recommend that the organisers make a concerted effort to collect tourism data that future host candidates would need to construct statistical forecasts.

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[16] It was necessary to express the projected number of international tourists in this way because no forecasts of the *level* of tourism for these future dates have been prepared – thus it is not possible to express the projections as growth rates.

The start years of all but the High Visitor projection have been delayed. As a result of the "reality check", IVC *has* made some revisions to the duration of the tourism projections. In both Sydney and Salt Lake City, we observed that Olympic-induced tourism *prior* to their Games was marginal. Hence, we have delayed the start year for induced tourism to 2008 in all but the high scenario. In the high scenario it is assumed that the tourism marketing agencies have adequate funding and are able to start marketing the province early (i.e., 2003). It is also assumed in the high scenario that the Olympic cachet leads to greater penetration into international markets and more exposure of British Columbia as a destination.[18] Therefore, we have retained the pre-2008 international tourism in the high scenario because the experiences of Sydney and Salt Lake should not be considered as the best outcome that British Columbia can achieve. This is because both started their Olympic marketing programs later than is assumed in the high scenario – Salt Lake City started 5 months before the Games and Sydney started 5 years before the Games. To achieve the high scenario, marketing efforts are assumed to begin 7 years in advance of the Games.

We recommend that future Olympic organisers make a concerted effort to collect tourism data specific to their Olympic Games.

The tails of all but the High Visitor projection have been truncated. Our research covering the experiences of other host cities also showed that Games-induced tourism tends to peak in the event year and the momentum generated will be most intensive in the three years immediately following the Games. Thus, the end year in the low, medium and medium-high scenarios is 2015.[19]

The high scenario includes Games-induced international tourism through 2020. This is because the experience of Barcelona since the 1992 Olympics demonstrates that it is possible to extend the Olympic induced tourism impact up to ten years after the Games. Barcelona's decision to host the Games was strategic and part of a long-term economic development plan which, in their case, led to more hotel capacity, which in turn, encouraged long term tourism growth. The underlying assumption of the high scenario for international tourists is that tourism marketing organisations would also view the Olympics as part of a long-term growth strategy and have the funds to develop a marketing program that has a positive impact on international tourists both before and after the Games.

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[18] It must be noted that in spite of the increased exposure, there is some debate whether Vancouver and the province can realistically expect the same gains from hosting the Winter Olympics that they realised from Expo86. That being said, even the high scenario does not approach the annual gains achieved by Expo86.

[19] These scenarios model the 3 years benefit observed in the research plus an additional 2 years due to an expectation of more effective marketing by British Columbia. This assumes that incremental marketing resources will be available.

Comparison with the experiences of other host regions. We reviewed the Olympic experiences of Sydney and Salt Lake City to do a comparison of the tourist projections. The Tourism Forecasting Council of Australia predicted that 1.74 million visitors would visit Australia between 1997-2004 as a direct result of the 2000 Games. During the Olympics (September 2000), an estimated 403,000 international tourists visited Australia and set the record for visitation for that month. In the three months after the Games, visitor arrivals increased by 15 percent, yielding an additional US $320 million in foreign exchange earnings for the country.[20] Overall results for 2000 show that Australia recorded 4.9 million international visitors, up 11 percent over the previous year, which suggests the country was well on the way to achieving its goal of doubling international tourism by 2010. While 2001 visitation numbers are down 3 percentage points as a result of September 11th, the Tourism Forecasting Council predicts the downturn in international tourism will be a short-term phenomenon, and the industry will grow by 7.3 percent a year, to reach 10.4 million arrivals by 2012.[21] The medium-high scenario in the updated model projects that a total of 2.7 million international tourists (see **Table 4**) will be drawn to British Columbia.

Table 4: Revised Cumulative Olympics-Induced International Visitors - Four Scenarios

Scenario	Olympic Induced International Visitors	Start/End Year	Difference From Original Model
Low Visits	+1,054,851	2008-2014	121,013
Average Visits	+1,657,866	2008-2015	-250,523
Medium-High Visits	+2,709,637	2008-2015	207,528
High Visits	+4,292,300	2002-2020	633,953

Source: October 2002 Economic Impact Model.

Although British Columbia is expected to attract 1 million international visitors more than Australia (1.7 million) as a result of hosting the Olympics, it is reasonable because geographically, Australia is a remote destination. Although the summer Games are more substantial than the winter Games, British Columbia's relative proximity to the U.S., Japan and Germany – all major sources of international tourism having significant interest in the winter Games – is a strong argument for this case. Salt Lake City organisers estimated that

In the medium-high scenario, British Columbia expects to receive:

- *1 million more visitors than Australia expected over 7 years surrounding event*
- *Twice as many visitors in 2010 as expected attendance at Salt Lake Games*

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[20] Australia Tourist Commission ATC Online "Arrivals of Overseas Visitors (final data) – September 2000", 2001 and Sydney 2000 Marketing Report, prepared for the International Olympic Committee, 2002, page 95.

[21] Australia Tourist Commission ATC Online "inbound Forecasts (2002-2012), 2002.

230,000 visitors would attend the Games.[22] The medium-high scenario projects some 600,000 international tourists in the Games year. Considering that Salt Lake City and Utah in general have a very limited international tourism industry compared to British Columbia, the projection for British Columbia does not seem unreasonable.

Other comments. The international tourism projections in the model span 6 to 18 years, between the low and the high scenarios respectively. This may turn out to be a conservative estimate of the Games-related tourism impact. There is a high incidence of repeat visitation to British Columbia and therefore some proportion of the Games-induced visitation may be sustainable further into the future. Although the Olympic-induced tourism impacts that may be sustained beyond the projections in the model are not included in the results of this study.

Up to this point in the economic impact analysis, the tourism projections in this model depend on the assumption of coordinated and successful tourism marketing. Further analysis should be undertaken to ascertain the level of coordination and funding that will be necessary to achieve the success marketing on which the tourism economic impact is computed.

Further analysis should be undertaken to ascertain the level of coordination and funding that will be necessary to achieve the success marketing on which the tourism economic impact is computed.

3.2 Gross versus incremental visitor/tourist spending

Incremental expenditures are calculated differently for resident visitors, resident spectators, external visitors and external tourists.

3.2.1 Resident visitors: gross versus incremental expenditures

Gross expenditures by resident visitors is calculated as the product of total resident visitors, total days visiting and average daily spend. This product represents the total dollars spent by resident visitors.

Incremental expenditures by resident visitors is calculated as the difference between spending by induced residents visitors (those who otherwise would have gone abroad or elsewhere in Canada) and spending by induced resident exits (those who leave British Columbia to avoid the Games). The model assumes that induced resident visitor expenditure is equal to expenditure these residents would have made outside of the province. This implies that the vacation budget is held constant whether they travel in British Columbia or elsewhere.

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[22] "Lessons from the Salt Lake City 2002 Olympic Winter Games", Utah Travel Council. According to Jon Kemp, Research Coordinator at the Utah Travel Council, Salt Lake City and the state of Utah chose not to make pre and post-Games tourism projections because of external factors and lack of reliable data.

Four scenarios are provided for the resident visitor numbers, summarised in **Table 5**. The resident visits are projected to commence in 2007 for pre-Games trials and competitions leading up to the Games and peak in 2010. The average daily spend varies from year to year, ranging from $100 to $200 ($200 in 2010); the average stay varies from 2-8 days (8 days in 2010).

Table 5: Resident Visitor Scenarios in Original Model

Scenario	2007	2008	2009	2010	Post Games
Conservative					It is likely that resident visitors will be attracted to the new Nordic facilities post-2010. These visitors have not been projected or included in the economic impact results.
Gross visitors	1,000	1,500	3,000	30,000	
Induced resident visitors	0	1,000	3,000	15,000	
Induced resident exits	0	0	3,000	5,000	
Incremental visitors	*0*	*1,000*	*0*	*10,000*	
Moderate Low					
Gross visitors	2,000	3000	10,000	75,000	
Induced resident visitors	0	2000	6,000	30,000	
Induced resident exits	0	0	3,000	5,000	
Incremental visitors	*0*	*2,000*	*3,000*	*25,000*	
Moderate High					
Gross visitors	5,000	7,500	20,000	100,000	
Induced resident visitors	0	4,000	10,000	50,000	
Induced resident exits	0	0	3,000	5,000	
Incremental visitors	*0*	*4,000*	*7,000*	*45,000*	
Aggressive					
Gross visitors	5,000	7,500	20,000	100,000	
Induced resident visitors	0	4,000	20,000	50,000	
Induced resident exits	0	0	0	1,000	
Incremental visitors	*0*	*4,000*	*20,000*	*49,000*	

Source: January 2002 Economic Impact Model.

The potential for additional resident visitation after the 2010 Games is significant. The new Nordic complexes in the Callaghan Valley, such as the luge and the ski jump, will likely draw visitors from around the province. This has been the experience at Olympic Park in Calgary. The impact of post-Games resident visitors has not been included in the analysis to date.

3.2.2 Resident spectators: gross versus incremental expenditures

Resident spectators are local to the area and do not require paid accommodation. The **gross expenditure** of resident spectator is calculated as the product of the number of resident spectators, their average daily expenditure and the average days spent attending events.

There are no **incremental expenditure** of resident spectators in the original economic impact model. It is expected that expenditures on the Games would be substitutes for other local entertainment expenditures and would not have an incremental economic impact.

Four scenarios for resident spectators were developed in the original model and are summarised in **Table 6**. The average daily spending in 2010 is assumed to be $50 with an average of 5 days in attendance at the Games. In 2009 resident spectator spending was set at zero.

Table 6: Resident Spectator Scenarios in Original Model

Scenario	2009	2010
Conservative	30,000	50,000
Moderate Low	50,000	75,000
Moderate High	40,000	150,000
Aggressive	50,000	250,000

Source: January 2002 Economic Impact Model.

3.2.3 External visitors (non-tourists): gross versus incremental expenditures

External visitors comprise media, athletes and athlete management, officials, Olympic Family representatives and sponsors. **Gross expenditures** for each group are calculated as the product of the number of visitors, their average daily spend and the average number of days in attendance. **Table 7** shows the external visitor numbers from the original model which include visits for pre-Games trials and competitions and an additional sporting event (such as a hockey championship) in 2012.[23] Other external visitors included in the post-Games period are foreign Olympic teams training at Olympic facilities. These external visitor estimates are based on calculations used by Salt Lake City organisers, though are generally more conservative than the Salt Lake estimates.

Table 7: External Visitor Numbers in Original Model

Year	Media	Athletes and Management	Officials and Olympic Family	Sponsors and Guests
2006	0	0	0	50
2007	0	0	0	100
2008	50	500	110	250
2009	100	3,416	752	1,000
2010	7,000	4,400	2,000	3,000
2011	0	100	22	0
2012	1,000	600	132	0
2013	0	100	22[24]	0
2014	0	100	22	0
2015	0	100	22	0

Source: January 2002 Economic Impact Model.

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[23] We note that external visitors are expected to visit the 2012 event but no resident visitors or spectators are expected/assumed to attend.

[24] Official visitors were conservatively estimated at the rate of 0.22 per athlete in the preliminary study. This ratio has been maintained in the update.

The conversion from gross to **incremental expenditures** for external visitors involves multiplying by the estimated proportion external to British Columbia in each year (some of the media, officials, sponsors, etc. are assumed to be from British Columbia). The proportion of external visitors varies by group as shown in **Table 8**.

Table 8: External Visitor Expenditures by Group – Percent Incremental

Group	Range	High	Low
Media	10-90% Incremental	90% 2008-2010	10% 2002-05/2011
Athletes and Management	100% Incremental	100% 2005-2015	100% 2005-2015
Officials and Olympic Family	5-90% Incremental	90% 2010	5% 2007
Sponsors and Guests	80% Incremental	80% 2005-2010	80% 2005-2010

Source: January 2002 Economic Impact Model.

The average spending and stay figures are summarised in **Table 9**. Note that the average spending of athletes and officials is zero in 2010. This is because the spending by these groups is already captured in the OCOG operating costs – to include their spending here would be double counting.

Table 9: External Visitor Average Spend and Stay in Original Model

Component	Average Spend Per Day	Length of Stay (Days)
Media	$100-200 ($100 in 2010)	2-20 days (20 days in 2010)
Athletes and Management	$0-200 ($0 in 2010)	6-14 days (10 days in 2010)
Olympic Family and Officials	$0-250 ($0 in 2010)	5-20 days (20 days in 2010)
IOC Sponsors and Guests	$500	1-20 days (20 days in 2010)

Source: January 2002 Economic Impact Model.

3.2.4 External tourists: gross versus incremental expenditures

Gross external tourist expenditures are equal to incremental tourism expenditures in both the original and new model. In both cases they are calculated as the difference between spending by induced external tourists (those who visit the Games, or whose visits to British Columbia are induced by Games publicity but otherwise would not have visited) and spending by induced tourist exits (those who would have visited British Columbia, but do not in order to avoid the Games). The only year in which induced visitor exits are modelled is in 2010 with 10,000 visitors displaced.

In the original model, external visitors spend, on average, $200 per day for 7 days in every year but the Olympic year. In the Olympic year, the external tourist daily spending was set at $329 with an average stay of 10 days, which is based on survey data from the 2001 World Figure Skating Championship. The assumptions about spending in the non-Games years and the source of Games year spending were recommended to the BCTIO by an industry expert.

3.2.5 Changes and recommendations

Resident visitors and spectators. In the original model, resident spectator spending was not included in gross impact. This appears to be an oversight and has been corrected so that resident spectators are included in gross impacts but not the incremental impact.

External visitors. In general, we accept the average spending data used for external visitors in Olympic and non-Olympic years presented in Table 9. We recognise that the subjective approach used in the preliminary report is one commonly employed in economic impact projections when data is not available. We observe similar undertakings in the economic impact studies conducted for Sydney's 2000 Olympic Games and Calgary's 1988 Olympic Games. We believe this approach is reasonable under the circumstances of this exercise.

We view that the number of Olympic-related media expected 2008 and 2009 in the original model is too conservative and their average spending is set too high. The 1994 Lillehammer Games organisers report over 5,000 registered media visitors in pre-Games years. As a result, we have increased media visits to 5,000 in 2008 and 2009. The increased pre-Games media visitation will be the result of organisers (and possibly tourism marketing organisations or private tourism firms) issuing invitations and covering a significant amount of the visitors' costs. Thus, the pre-Games media spending figure has been reduced to level of the Games year ($100 per day instead of $200 per day) spend to reflect the "subsidisation" of these visits.

External (international) tourists. The original economic model acknowledges tourism displacement – the phenomenon where international tourists considering a vacation in British Columbia choose another destination because of Olympic activity. However, we found that the experience of other winter Olympic host regions was more dramatic than what has been assumed in the original model. Skier visits at Alberta's ski resorts dropped 20 percent in the Olympic year, while Utah resorts reported a 9 percent decline in 2002. To better reflect the observed displacement at these previous sites, the number of displaced visitors in the new economic impact model has been increased from 10,000 to 45,000.[25] We note that, with adequate promotion, the world-class ski resorts in other regions of British Columbia (such as Big White, Fernie, Sun Peaks, etc.) could capitalise on the displacement phenomenon and help the province recapture displaced skiers during the 2009/2010 season. Recapturing some or all of the displaced visitors will depend on financing and success of the province's tourism organisations' marketing efforts.

As international tourist spending generates the largest component of the Games economic impact, this group's average daily spending estimates for 2010 were investigated further. Examples of daily spending and trip duration among visitors were found within the body of surveyed research on previous Olympics. As can be seen from **Table 10**, the daily spending figures used in the original model fall within the range of figures associated with the most recent two Games.

Table 10: Examples of Visitor Spending and Length of Stay

Event	Average Spend Per Day	Length of Stay (Nights)
Salt Lake City	CDN $440[26]	7.7 nights
Sydney	CDN $69	19 nights

Sources: State of Utah 2002 Olympic Winter Games: Economic, Demographic, and Fiscal Impacts, 2000 and The Economic Impact of the Sydney Olympic Games, NSW Treasury, 1997.

The original model's expenditure figure for international overnight visitors of $329 in the Olympic year is derived from Tourism Vancouver's Economic Impact Assessment of the 2001 World Figure Skating Championship. Tourism Vancouver had based the Figure Skating expenditure on a previous survey of convention delegate spending. The average daily spending by convention delegates ($357.70) was adjusted for the original model by adding average expenditures on event tickets and subtracting spending on attractions (it was assumed that attendees would not visit any additional attractions).

We note that the vast majority – 87 percent – of convention delegates paid for accommodation in Vancouver. Therefore, the spending figure during the Games year from the original model implicitly assumed that 87 percent of external tourists would pay for accommodation. The new model incorporates two variants of the Vancouver convention delegate spending figure – spending by visitors who stay with friends or relatives and spending by visitors staying in paid accommodation.

Data from the Atlanta and Calgary Games showed that one-half of all Olympic visitors would be staying with friends and relatives (VFR). Further, we note that this ratio was also used in Salt Lake City's projections. However, these figures include residents as well as external visitors. We have assumed that VFR stays amongst external tourists will be lower than resident visitors. Therefore, we have assumed that the VFR component amongst external tourists is 25 percent.

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[25] The new displacement number represents 9% displacement of Whistler's skier days with approximately 50% recaptured by other BC winter resorts such as Big White, Fernie or Sun Peaks.

[26] Salt Lake City included transportation costs to reach the city in their spending estimates (US$56 per day). They also differentiated between those paying for accommodations (US$395 per day) and those staying with friends and relatives (US$190 per day). An equal number of each type of visitor was assumed, yielding an overall average of $293 per day. It is assumed that no adjustments have been made for day visitors.

The daily spend of "visiting friends and relatives" (VFR) tourists excludes the accommodation component included in the delegate spend figure. As well, the food and beverage and transportation spending are halved to reflect the assumption that they will be eating and travelling with their friends and relatives some of the time.

For external tourists that are expected to pay for accommodation, the delegate daily spend was adjusted to acknowledge the difference in price levels of tourism commodities between a convention situation and the Olympic Games. The price level adjustments (an arbitrary 10 percent increase) allow for the demographic and congestion effects of the Olympics on daily spending. Also, the spending on attractions that were deducted from the conference daily spend used in the original model were added back, but at a reduced level, as we expect that Olympic visitors will visit other attractions though not at the same level as non-Olympic visitors. This daily spend figure is applied to the remaining Games year external tourists.

Table 11 shows the Tourism Vancouver convention delegate data used in the original model and the two variants used in the new version of the model. The weighted average of the VFR and non-VFR spends comes to 75% x 382.02 + 25% x 144.99 = $322.75. In the new version of the model, this spending figure has also been adjusted for inflation, amounting to $329 in 2002 prices.

Table 11: Tourism Vancouver Convention Delegate Expenditure Breakdown – 2001

	Delegates (2001 data)	**Olympic Visitor Paid Accommodation**	**Olympic Visitor VFR**
Accommodation	$165.62	$182.18	-
Retail	$60.09	$66.10	$66.10
Food & beverage	$60.09	$66.10	$35.05
Recreation, entertainment	$28.62	$20.03	$20.03
Private transportation	$27.90	$47.61	$23.81
Public transportation	$15.38		
Total	*$357.70*	*$382.02*	*$144.99*

Source: Tourism Vancouver 2001 Convention Delegate spending data and IVC calculations.

We note that the benchmark number of international visitors used for the projections in the original model includes both day and overnight visitors to the province (see **Table 12**). The original model had no special provision for day visitors. This is an important observation since spending per day typically varies dramatically between these groups.

Table 12: Breakdown of 2000 Benchmark International Tourists to British Columbia

Total day and overnight international visitors to British Columbia in 2000	10,016,860
International *overnight* visitors to British Columbia (Percent of Total)	6,815,470 (68%)
International *day* visitors to British Columbia (Percent of Total)	3,201,390 (32%)

Source: Tourism BC.

Owing to the relatively high proportion of day visitors (32 percent) found in Tourism BC's data (as shown in Table 12), the new version of the model differentiates between overnight and same-day visitors to British Columbia. The spending of day visitors has been set at one-third the amount of overnight visitors in accordance with data on day visitor spending versus overnight visitor spending for Whistler and other hallmark events.

In every year but the Olympic year, overnight visitors are assumed to make up 68 percent of arrivals as in the benchmark year. In the Olympic year, it is expected that day visitors will be less numerous relative to a normal year and the proportion of overnight visitors has been set at 85 percent.

Other Canadian tourists. As referred to earlier, the preliminary study did not include estimates of visits by Canadians from other provinces induced by the Games. This has been rectified in the update. The forecast visits by other Canadians to the Games or induced by Games, developed by IVC, are presented in **Table 13**.

Table 13: Projections for "Other Canadians" Olympic-induced Visitation (British Columbia residents excluded)

Year	Low Visits		Average Visits		Medium-High Visits		High Visits	
	Entries	Displaced	Entries	Displaced	Entries	Displaced	Entries	Displaced
2008	0	0	5,000	0	5,000	0	5,000	0
2009	5,000	0	5,000	0	10,000	0	10,000	0
2010	25,000	5,000	30,000	5,000	35,000	5,000	45,000	5,000
2011	5,000	0	10,000	0	10,000	0	10,000	0
2012	5,000	0	5,000	0	5,000	0	10,000	0
2013	0	0	2,000	0	5,000	0	5,000	0
Net Total	**35,000**		**52,000**		**65,000**		**80,000**	

Source: IVC estimation.

In all scenarios the following has been assumed:

- 75% VFR, 25% paid accommodation for 2010 (based on survey data from the Calgary Games), 50% / 50% split in all other years.
- Average length of stay: 7 nights in 2010 and 5 nights in other years.
- Average daily spend of $204 in 2010 (derived from 2001 Figure Skating Championships using 75% VFR). Daily spend in all other years is $200 – the same as international visitors.
- Displacement, the phenomenon that sees "other Canadians" considering a vacation in British Columbia choosing to go to another province because of the Olympics, has been set at 5,000 in each scenario.

Data from Calgary and Salt Lake City was used to devise four scenarios. It is important to note that both host cities opted to estimate only how many interprovincial/interstate visitors would be drawn to the Games as spectators. No discussion of Olympic-induced visitation in the remainder of the Games year, or pre or post years was found. Thus, we have been conservative in our estimates for the remainder of 2010 as well as pre and post Olympic-induced visitation.

Evidence from Calgary. An estimated 134,000 non-resident spectators attended the Games. A Visitors Survey conducted during the Games showed that 31 percent of visitors were "other Canadians" (non-residents of Alberta). Applying that ratio to the overall visitor number yields approximately 41,000 "other Canadians" attending the Games. However, just 27 percent of respondents said they would not have visited Calgary that year if the Olympics were not being held. Therefore, we concluded that roughly 11,000 "other Canadians" were induced by the Olympics to visit Calgary during February 1988.

Evidence from Salt Lake City. Salt Lake City estimated 105,000 domestic visitors would attend the Games. We note that the population of the US is roughly 10 times the size of Canada, suggesting that British Columbia could expect at least approximately 10,000 "other Canadians" to attend the Games. However, British Columbia has, proportionally, a larger short-haul population to draw from and has considerably more tourism products to offer.

The figures for Calgary and Salt Lake are for visits to the Games only. It can be speculated that visitors will also be induced to visit British Columbia due to the Game publicity during the Games year and other years. This and the fact that, arguably, British Columbia has more attractions and better marketing than Utah or Calgary led us to expect more than the 10,000 benchmark suggested by these two Games.

3.3 Tourism marketing

In order to achieve the higher tourism growth scenarios and capitalise on long-term opportunities, British Columbia's tourism industry will require significant marketing resources and a co-ordinated effort. Sydney and Salt Lake City's Olympic marketing programs and budgets were reviewed in order to extract valuable lessons for British Columbia.

3.3.1 Sydney, Australia

Sydney, Australia was awarded the 2000 Olympic Summer Games in 1993. In order to capitalise on a "decade of opportunity" to build tourism in Sydney and throughout Australia, the Australia Tourist Commission's (ATC) first step was to create an Olympic Games Business Unit to identify and co-ordinate Games-related tourism opportunities and leverage benefits for the tourism industry (1995). Achievements within the first year included the development of a 5-year marketing plan, and the launch of a media relations program at the 1996 Atlanta Summer Games to build advance interest in Australia.

The ATC initiated an ambitious US$6.7 million four year strategy (1997-2000). The objectives of the strategy were to:

- Maximise promotion of Australia through a media relations incorporating media visits, new technology, information distribution, and issues management
- Promote Australia's image through alliances with Olympic organisations and sponsors
- Increase high yield markets such as meetings, conventions, incentive travel
- Create trade-marketing programs for the tourism industry to capitalise on Olympic Games opportunities

In late 1999, The ATC launched a year long US$34 million campaign - Australia 2000: Fun and Games. The campaign, aimed at consumers in key international generating markets, was designed to boost visitation by 10 percent in 2000.

In order to build on the momentum of an extremely successful Games, the ATC launched a post Games strategy which included:

- 90+ tactical advertising campaigns with 200+ industry partners to promote packages to Australia (combined spending of $45 million)
- A $6 million direct marketing campaign, which included funds to upgrade the ATC's website
- Research to determine how the Olympics shifted Australia's image internationally
- Promotion of Meetings, Convention, and Incentive travel

Significant results of the ATC's Olympic programs include:

- 1.6 million visitors spending US$3.5 billion
- Accelerated the development of Brand Australia by 10 years
- Media relations and publicity programs generating US$2.1 billion of coverage
- Olympic sponsors spent US$170 million promoting Australia
- 700 percent increase in traffic to Australia.com
- 11 percent increase in visitor arrivals in 2000
- Growth in meetings and conventions business as Sydney was named the #1 conference and convention destination in the world in 2000.

3.3.2 Salt Lake City, Utah

The Utah Tourism Council (UTC) is responsible for all out-of-state and international marketing. The UTC has a base budget of US$5.6 million, which was topped up by the state government to approximately US$10 million for 2001 and 2002. The budget is approximately US$8 million for 2003.

It is important to note that Utah's tourism industry is structured much differently than British Columbia's. Utah recorded 17.8 million visits in 2000 – 96 percent of visitors (17.1 million) were US residents, while just 4 percent (700,000) were international visitors.

In order to capitalise on the Olympics, Utah's tourism industry devised a three-phased 1,000 day plan, primarily focussed on the domestic US market:

Phase I: 150 days leading up to the Games

- Torch relay: advance publicity for the Games, showcase Utah's tourism products
- Games broadcasts: features on Utah to encourage post-Game visitation
- Spring 2002: qualitative and quantitative research measure pre/post awareness and attitudes towards destination

Phase II: the 350 days following the Games

- Use research findings to structure consumer and trade campaigns to capitalise on Olympic "hot buttons", and integrating Utah's product strengths.

Phase III: the final 500 days

- Continue to emphasise brand strengths (escape, discovery, recovery, and accessible recreation) and garner market share from Colorado and Arizona.

3.3.3 Lessons for British Columbia tourism marketing organisations

A committee – Tourism 2010 – has been formed to develop a long-term strategic tourism marketing plan for the province. The committee comprises Tourism Vancouver, Tourism Whistler, Tourism Victoria, Tourism Richmond, Tourism British Columbia and the Canadian Tourism Commission. The key lessons for these industry partners from the experiences in Australia and Utah are:

- Media and public relations campaigns are key components of a pre-Games strategy.
- Co-ordination of organisations is necessary to maximise benefits (tourism marketing organisations, sponsors, sports organisations).
- There is a potential need for increased tourism marketing funding commitments from governments and industry to support the marketing strategy.
- Tourism growth prospects are most favourable in the 3 years immediately after the Games.
- It is important to preserve the relationships and networks that are in place for the Olympics.
- Using research to measure pre/post awareness and attitudes towards destination is key to building on Olympic momentum.

PART II – Multiplier Analysis and Results

4.0 Measuring Indirect and Induced Impacts

When the operations of various industries in the economy are closely related or "linked" to each other, an increase of activity in one industry will often increase the level of activity in other industries. These linkages cause changes in one industrial sector to have indirect and induced effect in other sectors. The total effect of the change is the sum of direct, indirect and induced effects.

Consider the auto manufacturing industry versus the logging industry. Apart from employing workers to work directly in the factory itself, the auto factory would also create a large number of employment opportunities along its whole chain of suppliers. For example, one of its suppliers would be a tire company. This company in turn would be supplied by a rubber company and so on. The total economic impact is greater than the original direct economic impact.

In contrast, the resource based logging industry uses substantially fewer suppliers and thus has somewhat fewer linkages to other sectors of the economy. Increased activity in logging would affect the activity of other industries, but perhaps not to the same degree as would auto production. Therefore the impact on the economy could be substantially smaller. A multiplier is basically a number that describes the degree of linkage between one sector of the economy and the rest of the economy. It measures the "rippling" effect of a change in one industry, such as an added auto factory, as it transcends through the various parts of the economy. The greater the linkages in the economy, the greater the multiplier and the potential economic impact.

4.1 The British Columbia Input-Output Model

The multipliers used to calculate the economic impact of the games are taken from the British Columbia Input-Output Model (BCIOM). Input-output models are the most common form of model from which economic impact multipliers are obtained. The models are made up of tables which detail the inter-industry relationship of production activities describing how much output each industry bought from and sold to other industries in the economy. Each industry is represented by a row and a column in the I-O table (or matrix).[27] Consider, for example, the auto industry. Production of an additional $100 million of autos may require $8 million in steel. In the I-O table, the "autos" row would have an entry of 0.08 under the steel column. Entries appear on the automobile row in the columns for each industry affected by increased auto production. In essence these tables attempt to summarise the observed linkages among various sectors of the economy. An example of such a table can be found in **Appendix A**.[28]

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[27] Input-Output Analysis was developed by Professor W. Leontiefof MIT.

[28] The tables provided in the appendix do not express input-output in terms of ratios but in absolute values. For example, for an output of $5,890.1 million dollars in agriculture, it will input $1,152.1 million from agriculture itself, $1,199.0 million from the manufacturing industry, and so on.

The BCIOM is maintained by the British Columbia Ministry of Finance and Corporate Relations and is based on data supplied by the Input-Output Division of Statistics Canada.[29] The model structures the business sector of the entire British Columbia economy in terms of who makes what and who uses what. The current version of model describes 243 industries making or using 679 commodities, and can produce up to 17,000 different multipliers for the British Columbia economy.

The input requirements of some industries within British Columbia are obtained from outside the province. For example, industries using coca beans import these beans from overseas as none are produced in British Columbia. The BCIOM accounts for imports by reducing the economic impact of industries using imports in line with the proportion of imports they use. This applies equally to industries which use out-of-province or overseas labour.

4.1.1 Open and closed models

Input-output tables are mainly classified as "closed" or "open". Typically, the open model will only measure the industry effects, that is, direct and indirect impacts only. They do not include the effects of induced spending, taxes, or other factors such as government spending.

"Closed" models, on the other hand, differ from the open models in that they include induced income effects. These models vary somewhat in definition. Some models will be completely closed, while others may be closed only for government spending or for some other sector(s).

The multipliers used for the economic impact of the games are based on the closed version of the BCIOM and hence include induced effects.[30] Great care has to be taken to ensure that economic impacts are not double-counted. For example, spending by construction workers on entertainment (e.g. movie tickets) is considered induced relative to the construction industry, but direct relative to the entertainment sector.

The guidelines in the BC Stats manual have been followed in order to ensure that induced impacts have not been double-counted.

4.1.2 The With Safety Net and No Safety Net scenarios

The BCIOM considers scenarios for calculating induced impacts:

- **No Safety Net.** Assumes there is no social safety net – those who do not earn have no income. Therefore all new jobs are assumed to be filled by people previously with zero income in British Columbia.

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[29] The model description is taken from the BC Stats document *British Columbia Provincial Economic Multipliers and How to Use Them*, published in May 2001.

[30] The model manual indicates that it is conceptually valid to compute induced impacts if the *direct* impact is not generated by consumption spending from within the economy.

- **With Safety Net.** Those who lose jobs stay in the province and collect Employment Insurance (or use their savings). Conversely, new jobs are filled by people formally receiving assistance.

The *With Safety Net* produces lower induced multipliers, as each new job increases income by a smaller amount - the difference between the salary of the new job and the previous unemployment benefit, rather than the difference between the salary and zero. In calculating the impact of the Games, the *With Safety Net* induced multipliers have been used as they best reflect the British Columbia economy and are more conservative.

4.2 Limitations of the input-output model

Like all models of economic behaviour, the Input-Output model is a simplification of reality. As a consequence, it does have limitations which should be kept in mind when reviewing results.

- **Assumes linear effects or constant returns to scale.** The model does not allow for economies (or diseconomies) or scale, so inputs are always consumed in the same proportion regardless of the scale of production. This may be unrealistic considering economies of scale are a factor in many industries. These models also assume there are no productivity gains in the economy. Likewise, increases and decreases in expenditure show the same proportional impacts which may not be the case in reality.
- **Time is not explicitly represented.** The model is static and measures the total economic impact without consideration for the amount of time required for the propagation of all the effects.
- **Supply is perfectly elastic.** Any increase in demand for goods and services leads to the producing industries increasing their output by an equal amount to satisfy that demand. It is assumed that the industries have no difficulty in obtaining intermediate inputs such as raw materials, labour and imports. If a shortage of resources did occur, this could lead to inflationary pressures, substitution effects or changes in imports, which would change the overall economic impact.
- **All Industries are operating at full capacity.** The model assumes, therefore, that any increase in output would require a further proportional demand for labour services. This implies that no industry can meet new demand with its existing labour force. Therefore, employment changes in proportion with changes in output.
- **Economic displacement is ignored.** Economic gains from a new project should be tempered by subsequent contractions and loss in existing industries. For example, a new transit system would produce economic impacts from its construction and operation. However, competing modes such as taxis and buses may lose out offsetting this impact. Note though, that this model is designed to examine just economic impact; these displacement effects, and other externalities, should be considered in an overall Benefit-Cost Analysis.

The industry data and linkages are based on 1996 revised data. This is due to the availability of relevant data from Statistics Canada. Use of this data implicitly assumes that production technology, input patterns and relative prices are unchanged from 1996. Employment impacts, however, do take account of changes in labour productivity and wage rates by incorporating more recent employment information.

4.3 Applying the economic impact multipliers

Applying the multipliers produced by the BCIOM is relatively simple.

4.3.1 Example: new transportation sector expenditure

For example, in order to examine the total impact of an increase in output of $10 million in the Transportation Industries (due to an increase in federal funding of $10 million on local bus services). In order to estimate the GDP impacts, the BCIOM gives the following multipliers for the transportation Industry:

Direct impacts: 0.45, direct GDP is 0.45 x 10 million = 4.5 million
Indirect impacts: 0.26, indirect GDP is 0.26 x 10 million = 2.6 million
Induced impacts: 0.10, induced GDP is 0.10 x 10 million = 1.0 million

The direct GDP impact is 0.45 x 10 million = 4.5 million, the indirect impact is 0.26 x 10 million = 2.6 million, and the induced impact is 0.10 x 10 million = 1.0 million. Therefore, the total GDP generated in British Columbia by $10 million in direct industry expenditure is $8.1 million.

To calculate the employment generated, we can use the following multipliers for the transportation industry:

Direct impacts: 7.45 per million dollars, direct employment is 7.45 x 10 = 74.5
Indirect impacts: 4.82 per million dollars, indirect employment is 4.82 x 10 = 48.2
Induced impacts: 1.65 per million dollars, induced employment is 1.65 x 10 = 16.5

As such, $10 million of direct output would produce 139.2 full-time equivalents of employment. The BCIOM also produces multipliers to calculate federal, provincial and municipal taxes (direct, indirect and induced).

4.3.2 Changes and recommendations

The new version of the economic impact model contains an updated provincial tax multiplier that includes BC Corporate Income Tax revenues. The method for constructing this multiplier is presented in **Appendix B**.

The calculation of tourist spend on retail has been corrected to match the methodology recommended in the BC Stats manual, *British Columbia Provincial Economic Multipliers and How to Use Them* (published in May 2001) which describes how to use the impact multipliers produced by the BCIOM.

We observe that the BCIOM produces conservative multipliers in both the original and updated models. Typically economic impact multipliers generate total impacts between 2 and 3 times the size of the direct impacts. The BCIOM multipliers yield total impacts between 1.5 and 2 times greater than direct impacts.

4.4 Spending breakdown

In order to determine the correct multipliers to apply, the expenditures associated with the Games were broken into various industries. The expenditures in OCOG costs, non-OCOG costs and visitor spending were each broken down into the industries where they are likely to be spent. For example, expenditures by visitors will likely be spent on accommodation, food and beverages, retail, transportation, etc. OCOG and non-OCOG costs will likely be spent on construction, furniture and fixtures, etc. The percentage breakdown of expenditures is given in **Table 14**. These figures were developed in the original study and have not changed in this update.

The percentage split for visitors is based on surveys by Tourism Vancouver. The percentage split for OCOG costs is based on figures from Salt Lake with some adjustments to account for local conditions. The percentages for non-OCOG expenditures were determined through a subjective process by which the likely resources required for the projects were identified.

Table 14: Expenditure Breakdown

Industry	Visitor Spending	OCOG Costs	Non-OCOG Costs	
			Gross	Incremental
Miscellaneous Clothing Industries	0%	1%	0%	0%
Furniture & Fixture Industries	0%	28%	10%	10%
Printing & Publishing	0%	1%	0%	0%
Construction - Residential	0%	2%	0%	0%
Construction - Non-Residential	0%	9%	0%	0%
Construction - Roads	0%	5%	70%	90%
Transport	15%	3%	0%	0%
Communications	0%	10%	0%	0%
Retail	18%	0%	0%	0%
Finance	0%	2%	0%	0%
Insurance	0%	2%	0%	0%
Accommodation Services	33%	1%	0%	0%
Food & Beverage Services	24%	2%	0%	0%
Business Services	0%	25%	20%	0%
Amusement & Recreation Services	10%	9%	0%	0%
Total	100%	100%	100%	100%

Source: January 2002 economic impact model.

The total expenditures in each category were broken by industry using the percentages above. The BCIOM-generated multipliers for each of these industries were then applied to the expenditures to calculate GDP, employment and tax impacts. The same profile is assumed for both gross and incremental expenditures.

4.4.1 Changes and recommendations

The original economic impact model excluded all spending on Amusement & Recreation Services. This appears to be based on the assumption that this spending will be directed towards the Olympics and so is already accounted for in the Olympic Revenues. However, spending in all years has been excluded, as has spending related to OCOG costs. Other than in 2010 and 2009, it is unlikely that much of the tourist Amusement & Recreation expenditure will be on Olympic related items, and there is reason to expect the OGOC related spending to go on Olympic items. The model has been adjusted so that spend by tourists on Amusement & Recreation Services in 2009 and 2010 is excluded, but not in other years.

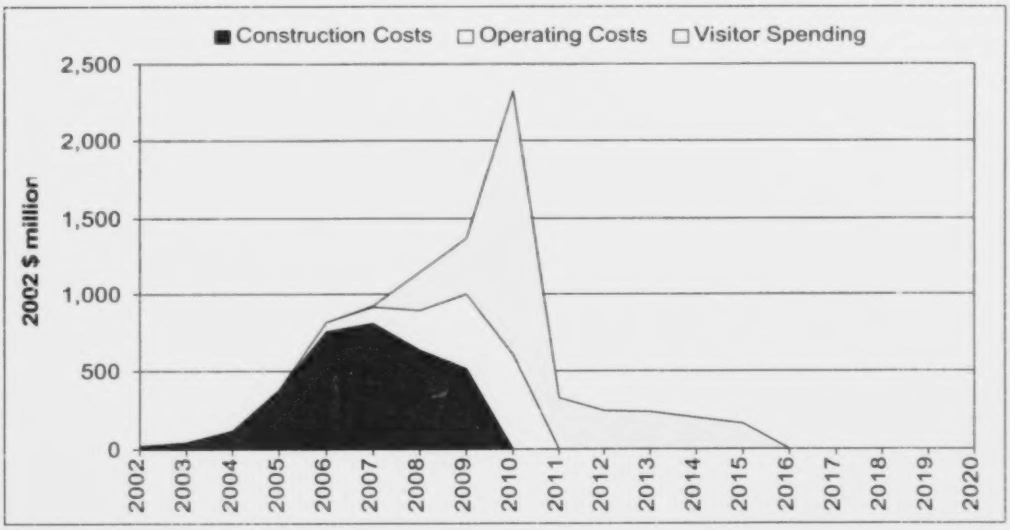
5.0 Updated Economic Impact

The BCIOM-generates multipliers for British Columbia industries to calculate GDP, employment and tax impacts. The industry-specific multipliers were applied to total Games-related expenditures allocated across British Columbia industries according to the percentages provided in Chapter 4.0. Prior to applying the multipliers to visitor expenditure, estimated sales tax (GST, PST etc) was subtracted as this expenditure is assumed to have no economic impact. These taxes were then added to the total federal and provincial direct tax impacts as the multipliers do not estimate revenues from sales taxes.

5.1 The timing of expenditures

As stated before, the impacts of the Games are generated by construction relating to Olympic facilities and transport infrastructure, operating costs, such as policing, and by spending by tourists and visitors to British Columbia. **Figure 5-1** summarises for the Medium-High Visits scenario the amounts and timings of the spending in these three areas that contribute to the economic impact of the Games.[31] As can be seen, most of the pre-Games spending is related to construction with some tourist spending in the two years before the Games. During and after the Games virtually all the spending is tourism related. An examination of impacts resulting from this spending is presented in sections that follow.

Figure 5-1: Summary of Gross Spending Related to the Games – Medium-High Visits Scenario



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[31] Additional graphs to illustrate every scenario are available on the Ministry of Community, Aboriginal and Women's Services website – www.mcaws.gov.bc.ca.

5.2 Updated gross and incremental economic impacts

Table 16 and **Table 17** (following pages) present the gross and incremental impacts, broken down into direct and multiplier (indirect and induced) impacts, for all visitor scenarios.[32] A comparison of the updated economic impacts with the preliminary results from the January 2002 report is provided in the study conclusions in **Chapter 7**.

The tables includes both the preliminary and the updated estimates. While revisions to the tourism projections and spend parameters had a negative impact on all tourism scenarios, the positive impact of using *real* dollar expenditures more than made up for the reductions.

The net effect of IVC updates and revisions to the January 2002 model on the economic impact results was positive.

The scenarios differ in the tourism projections; the construction and operating costs and their impacts are the same in all four scenarios. The relative success of the Games in these scenarios will depend on the co-ordination and effectiveness of tourism and other marketing campaigns. The updated estimates of the incremental direct GDP impact range from $1.3 billion in the Low Visits scenario to $2.7 billion in the High scenario (see Table 17). The number of incremental direct person years generated ranges from 32,000 to 71,000 (see Table 17).

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[32] Note that the induced components for gross and incremental economic impacts are the same. This is because the BC Stats manual specifies that induced impacts can only be generated by expenditures from outside of BC. The additional expenditures represented in the gross impacts derived from BC sources and hence the induced effects are simply money moving within the province.

Table 16: Updated *Gross* Economic Impact for All Scenarios

Tourism Impact Scenario	GDP	Employment (Person Years)	Wages	Fed Taxes	Provincial Taxes	Local Taxes
Low Visits Scenario						
Direct	$2,362 Million	58,000	$1,937 Million	$198 Million	$203 Million	$26 Million
Indirect + Induced	$1,213 Million	21,000	$719 Million	$75 Million	$115 Million	$34 Million
Total	*$3,575 Million*	*79,000*	*$2,656 Million*	*$273 Million*	*$318 Million*	*$60 Million*
Medium Visits Scenario						
Direct	$2,614 Million	65,000	$2,172 Million	$244 Million	$245 Million	$31 Million
Indirect + Induced	$1,355 Million	24,000	$804 Million	$87 Million	$130 Million	$39 Million
Total	*$3,969 Million*	*89,000*	*$2,976 Million*	*$331 Million*	*$375 Million*	*$70 Million*
Medium-High Visits Scenario						
Direct	$3,208 Million	81,000	$2,727 Million	$357 Million	$347 Million	$43 Million
Indirect + Induced	$1,693 Million	30,000	$1,008 Million	$113 Million	$166 Million	$51 Million
Total	*44,901 Million*	*111,000*	*$3,735 Million*	*$470 Million*	*$513 Million*	*$94 Million*
High Visits Scenario						
Direct	$3,782 Million	97,000	$3,261 Million	$462 Million	$442 Million	$53 Million
Indirect + Induced	$2,025 Million	36,000	$1,209 Million	$138 Million	$201 Million	$63 Million
Total	*$5,807 Million*	*133,000*	*$4,470 Million*	*$600 Million*	*$643 Million*	*$116 Million*

Source: The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

Table 17: Updated *Incremental* Economic Impact for All Scenarios

Tourism Impact Scenario	GDP	Employment (Person Years)	Wages	Fed Taxes	Provincial Taxes	Local Taxes
Low Visits Scenario						
Direct	$1,271 Million	32,000	$1,076 Million	$137 Million	$135 Million	$19 Million
Indirect + Induced	$742 Million	13,000	$440 Million	$50 Million	$79 Million	$24 Million
Total	*$2,013 Million*	*45,000*	*$1,516 Million*	*$187 Million*	*$214 Million*	*$43 Million*
Medium Visits Scenario						
Direct	$1,509 Million	39,000	$1,297 Million	$181 Million	$175 Million	$23 Million
Indirect + Induced	$879 Million	15,000	$524 Million	$61 Million	$93 Million	$29 Million
Total	*$2,388 Million*	*54,000*	*$1,821 Million*	*$242 Million*	*$268 Million*	*$52 Million*
Medium-High Visits Scenario						
Direct	$2,104 Million	55,000	$1,853 Million	$294 Million	$277 Million	$35 Million
Indirect + Induced	$1,217 Million	22,000	$727 Million	$87 Million	$129 Million	$41 Million
Total	*$3,321 Million*	*77,000*	*$2,580 Million*	*$381 Million*	*$406 Million*	*$76 Million*
High Visits Scenario						
Direct	$2,686 Million	71,000	$2,394 Million	$400 Million	$373 Million	$46 Million
Indirect + Induced	$1,553 Million	28,000	$930 Million	$113 Million	$165 Million	$53 Million
Total	*$4,239 Million*	*99,000*	*$3,324 Million*	*$513 Million*	*$538 Million*	*$99 Million*

Source: The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

The incremental economic impact of the Games wholly attributable to dollars spent by non-residents of British Columbia in the updated Medium-High Visits scenario amounts to:

- 55,000 direct person years of employment (PYs) in British Columbia earning $1.9 billion in direct wages. Including multiplier (indirect and induced) impacts, the Games are expected to generate 77,000 total PYs earning a total of $2.6 billion in wages.
- $2.1 billion in direct economic activity (GDP) in British Columbia. Including multiplier (indirect and induced) impacts, the Games are expected to generate $3.3 billion in total GDP.
- $277 million in direct provincial tax revenues, $294 million in direct federal tax revenues and $35 million in direct local tax revenues.

5.3 Pre-Games period impact (2002-2009)

Pre-Games
direct economic impact (2002-2009):
- *19,000 person years of employment*
- *$632 million in wages*

The economic impact expected in the pre-Games period is attributable in large part to the venue construction program.[33] However, there will also be demand for the professional services provided by architects, accountants, engineers, environmental consultants, insurance brokers, financial institutions and others during the pre-Games period. The provincial tourism industry is expected to benefit from Olympic organisers, sponsors, media and athletes attending the test events and training camps in the two years prior to the Games and from tourism attracted by Games-related media exposure. Greater tourism benefits are possible if the use of the Olympic rings by tourism marketing organisations, the international exposure of the host city, international media interest in the Game preparations and other opportunities effectively broaden the province's international exposure. The incremental economic impact figures for the pre-Games period are provided in **Table 18**.

Table 18: Pre-Games Period Incremental Economic Impact - Medium-High Visits Scenario

	GDP	Person Years	Wages	Federal Taxes	Provincial Taxes	Local Taxes
Direct	$764 Million	19,000	$632 Million	$66 Million	$70 Million	$11 Million
Indirect + Induced	$448 Million	8,000	$265 Million	$28 Million	$47 Million	$14 Million
Total	*$1,212 Million*	*27,000*	*$897 Million*	*$94 Million*	*$117 Million*	*$25 Million*

Source: October 2002 economic impact model.

The pre-Games period is expected to contribute approximately 35 percent of the incremental economic impact of the whole 2010 Games in the Medium-High Visits scenario.

5.4 The impact in 2010

2010 Games Year
direct economic impact:
- *22,000 person years of employment*
- *$739 million in wages*

The economic impact of the 2010 Olympic Games in the actual Games year are driven by visitors and operating expenditures and is shown in **Table 19**. International visitors (athletes, organisers, media and sponsors) and tourists from outside of British Columbia are expected to come to the province in 2010 for the Games. A great deal of money staging the Olympic events will also be expended in 2010 contributing to the economic impact. One hundred percent of the OCOG operating costs in 2010 contribute to the incremental economic impact in the Games year.

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[33] As explained in Section 6, there is also potential for both foreign investment and trade expansion benefits which have not been quantified in this study.

Table 19: Games Year Incremental Economic Impact - Medium-High Visits Scenario

	GDP	Person Years	Wages	Federal Taxes	Provincial Taxes	Local Taxes
Direct	$821 Million	22,000	$739 Million	$133 Million	$122 Million	$14 Million
Indirect + Induced	$472 Million	8,000	$282 Million	$36 Million	$50 Million	$17 Million
Total	*$1,293 Million*	*30,000*	*$1,021 Million*	*$169 Million*	*$172 Million*	*$31 Million*

Source: October 2002 economic impact model.

The estimated incremental economic impact of the Games year activities highlights the fact that it is a multi-year impact. The Games year represents another 40 percent of the cumulative incremental economic impact of the Games in the Medium-High Visits scenario.

5.5 Impact after the Games (2011-2015)

Post-Games
direct economic impact (2011-2015):

- *14,000 person years of employment*
- *$482 million in wages*

Post-Games economic impact is generated by external tourism, i.e., tourists from overseas and from the rest of Canada. There is the potential for both foreign investment and trade benefits following the Games, as explained in Section 6, but no value has been assigned to these elements in this update. The number of out-of-province visitors is predicted to be elevated by the enhanced image and awareness of the host region. This leads to improved probability of staging follow-up sporting events inducing business and leisure visitors. The exposure from the Games is also expected to boost international convention business.[34] The incremental economic impact of international tourists and visitors in the post-Games period is presented in **Table 20**. The post-Games impact represents about 25 percent of the cumulative incremental economic impact of the Games in the Medium-High Visits scenario.

Table 20: Post-Games Period Incremental Economic Impact - Medium-High Visits Scenario

	GDP	Person Years	Wages	Federal Taxes	Provincial Taxes	Local Taxes
Direct	$518 Million	14,000	$482 Million	$95 Million	$85 Million	$10 Million
Indirect + Induced	$299 Million	6,000	$180 Million	$23 Million	$32 Million	$11 Million
Total	$817 Million	20,000	$662 Million	$118 Million	$117 Million	$21 Million

Source: October 2002 economic impact model.

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[34] The impact of increased convention business is not included in the results presented here.

6.0 Additional Analysis

A number of questions have arisen concerning the effect of staging the 2010 Winter and Paralympic Games on economic assumptions that underlie this economic impact analysis.[35] These questions cover the effect of hosting the Games on economic relations, price levels, labour migration and intangible benefits from transportation improvements to name a few. In the following sections we address each of the issues raised.

6.1 Potential Games-induced investment

Hosting the Olympic Games can assist in attracting new organisations and businesses to the host city. The attention generated by the Games for the host city can result in post-Games benefits such as permanent increases in tourism, businesses investigate the host city as a potential location, increased exports of regional products, etc. The Games may also have a positive impact on establishment of new trade relations (imports and exports) but no evidence of this was documented in the surveyed literature other than trade in tourism exports. These are referred to as the trade and investment impacts of the Olympics.

The causal effect of hosting the Olympic Games on trade and investment is only a partial one however, and has proved impossible to quantify in general terms. The time available to undertake this update of the preliminary economic impact study does not permit any modelling of potential investment and trade impacts in British Columbia. Instead, we use an approach to assess the potential trade and investment generated by hosting the Games surveying experiences of other countries – notably Australia with the Sydney 2000 Games and the U.S from the Atlanta 1996 Games. In both cases, public/private partnerships were formed and funded to undertake marketing of the city as a desirable business location. This was accomplished by well-funded economic development marketing plans that provided domestic and international firms with strategic information and services to assist in evaluating the host city for potential investment. The investment marketing model developed in Atlanta to coincide with the 1996 Summer Games was later applied in Sydney at the time of the 2000 Summer Games. Both of these cities attracted new business investment as a result of their marketing efforts, which essentially levered the international recognition provided by the Olympic event.

An overview of the approaches and success of the models adopted by organisations in Atlanta and Sydney are presented in the following sections. Then the process by which British Columbia could achieve similar results is explored but no amount of projected investment has been included in the economic impact calculations.

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[35] Technically speaking, they are more in line with cost benefit or multiple account analysis than economic impact analysis.

6.1.1 Operation Legacy – *Georgia 1994-1997*

Operation Legacy was the initiative which used the 1996 Summer Olympic Games to bolster business investment in Atlanta. The Georgia Power Co., a major utility, organised a consortium to implement Operation Legacy including state economic development organisations, the Atlanta Chamber of Commerce and NationsBank Corp. Operation Legacy ran from 1994 through 1997 and the target outcomes were 20 new facilities and 6,000 new jobs for Georgia.

There were three main phases in the Operation Legacy initiative. The first two took place in the pre-games period, the third during the Games themselves.

Phase 1. In 1994 the organisation researched and identified groups of companies (clusters) that best fit Georgia's work force and infrastructure. Georgia's growing clusters were identified as: automotive, corporate headquarters, aerospace, and advanced communications. Future clusters included health information, agribusiness and electronics. The organisation deemed this narrowly focussed, research-based approach the most effective in generating new business leads.

Phase 2. The executives from firms identified during phase 1 were invited to attend pre-Olympics programs in Georgia. The organisers paid all costs associated with potential investors attending the pre-Olympics programs. By July 1995, 198 companies had visited Georgia.

Phase 3. Operation Legacy's follow-up program invited top prospects to attend the Summer Olympic Games in 1996. The organisers paid all costs associated with potential investors attending the Olympics.

In total, some 400 companies visited Georgia as a result of Operation Legacy. By 1999—three years after the Atlanta Games—42 companies had invested in the State of Georgia. This represents a total conversion rate, visitors to investors, of 10.5 percent. Metro Atlanta-area relocations or expansions at companies such as Android Corp., Atlanta Film Packaging, Automatic Data Processing, Cagle's, ConAgra Poultry Co, Mortek Corp. and Philips Consumer Electronics are cited as some of Operation Legacy's success stories.

Organisers of the Olympics-related Operation Legacy said that 34 Georgia locations, employing 5,600 people and representing a capital investment of more than $250 million, have relocated or expanded in the state as a result of the program, which brought about 400 executives to the state before and during the Games. By June 1999, 42 new Georgia locations or expansions had been announced or completed with capital investment totalling $373 million. Operation Legacy's goal was 6,000 jobs at 20 new Georgia locations. This goal was exceeded in both measures as shown in **Table 22**.

Table 22: Operation Legacy

	Businesses Attracted	Investment	Jobs
1999	42	$373 million	6,700
Target	***20***		***6,000***

Source: NSW State Chamber of Commerce, Olympic Fact Sheet.

6.1.2 Investment 2000 – *New South Wales 1997-2000*

A number of investment attraction and industry development programs were initiated in Australia during the 1997-2001 period to lever the impact of the 2000 Summer Games into economic growth. Specific programs were designed to promote: the State food and beverage industry; technology firms; contractors involved in infrastructure built for the Games; and general contacts and relationships between New South Wales and Australian businesses and overseas partners.

One of the more significant programs that has had measurable results is Investment 2000. The Investment 2000 program was an international marketing program designed to introduce senior business leaders to the Australian economy and provide ongoing support to assist them in their decision to invest in Australia. This program was inspired by Georgia's Operation Legacy and, like Operation Legacy, was a public private partnership. Two private sector parties, Telstra and Westpac, teamed up with the State and Commonwealth governments.[36] The initiative began in 1997 and was exclusively aimed at attracting investment to Australia from other parts of the world.

The program was carried out in four phases.

Phase 1. A broad support network was created to facilitate access to senior corporate and government leaders and other key information sources. The network also provided contacts at future customers, suppliers, partners and advisors.

Phase 2. The first stage of engagement for potential investors took place at a series of 48 business forums in hub business centres across the United States, Europe and Asia. More than 1,900 international business leaders were invited to attend these meetings that took place between

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[36] The Department of State and Regional Development and Austrade/Invest Australia were the State and Commonwealth government departments respectively.

March 1998 and April 2000. The wide distribution of the invitations allowed more companies to be reached than the research approach used by Operation Legacy and was cost effective. The organisers hoped to have 600 attendants at the off-shore forums in Phase 2 and they received over 1,900.

Phase 3. Twelve reciprocal business visit programs were organised between December 1998 and December 2000. These provided the opportunity for corporate decision-makers to reorganise pressing schedules and assemble in Australia. The 2-3 day conferences included presentations on the Australian economy and investment climate. The organisers hoped to have between 150 and 200 visitors to Australia in Phase 3 and they received nearly 350. Investment 2000 did not make any contribution to potential investors' travel costs.

Phase 4: Ongoing support to potential investors to help them develop and realise their investment strategies.

Investment 2000 has resulted in 45 companies choosing to locate in Australia with another 44 companies still actively assessing the opportunity to invest in Australia. The commitments that Investment 2000 attracted are largely from small, privately owned, technology-based companies. These companies are all of international origin as shown in **Table 23**. The anticipated level of investment by 2002 is currently estimated to be $520 million, with 1,150 jobs being created.

Table 23: Committed and Potential Investments Resulting From Investment 2000 Initiative

Geographic Origin	Committed	High Potential	Total
USA*	15	2	17
Europe	11	21	32
Asia	12	12	24
New Zealand	6	9	15
South Africa	1	0	1
Total	*45*	*44*	*89*

Source: www.investment2000.com

6.1.3 Summary and potential for British Columbia

Though the Investment 2000 initiative was modelled after Operation Legacy, we observe significant differences in the approach and results between Sydney and Atlanta (**Table 24**). On one hand, Operation Legacy focused on diverting domestic capital to the State of Georgia. The resulting locations were primarily heavy industry presumably because that is where the State's competitive advantages lie. On the other hand, the Australian initiative sought foreign investment dollars and attracted new high-tech businesses. The presence of new technology industry represents desirable economic diversification for Australia. Although the value of new investments and number of new employees in Georgia exceeds the Australian figure, the investment per employee resulting from Investment 2000 is four times greater.

Table 24: Investment 2000 versus Operation Legacy – Approach and Achievements

	Operation Legacy Atlanta	**Investment 2000 Sydney**
Target Investors	U.S.	International
Businesses Attracted	Heavy industry	Technology
New Establishments	42	45
Investment Value (US$)	$373 million	$260 million
Employees	6,700	1,150
Investment Per Employee	$56,000	$226,000

The Games presence may not have been essential to the success of these programs but the benefits of the Games appear to have been:

- Providing the stimulus to bring the partners together;
- Enhanced recognition through the use of the Olympic Games logo;
- Galvanised co-operation with the initiative;
- Providing an awareness of the host region was an advantage in presenting the business case; and
- Providing an additional impetus to visit the region and potential sites.

The general benefits of the private/public sector co-operation perceived from Investment 2000 (and could be generalised to include Operation Legacy) appear to have been:

- Investors found private sector interests were understood;
- Investors received a candid and forthright view of the nature of the investment opportunity; and
- Investors were given high level access to decision-makers, both government officials as well as business leaders.

In order to attract Games-related investment the British Columbia, provincial government might consider partnering with private sector companies and economic development agencies. Together they should pool and allocate their human and financial resources for a common goal to use the Olympics to attract new investment to the province. Co-ordination and effort should begin in pre-games period. In order to highlight British Columbia's competitive advantages, the public/private partnership should be prepared to provide reliable customer service to manufacturers, distributors and service firms in terms of rapid response to information requests and experienced counsel. To this end, adequate funding will be key.

We understand that the province is already moving the public-private partnerships model forward. For instance, *Partnerships B.C.* has been created by the province to foster the development of public-private partnerships in B.C. In addition, the *Invest British Columbia* initiative is being developed specifically to create a partnership amongst the Province, community economic development agencies and private sector partners to market the province as an target for industrial investment and to provide timely, coordinated and informed response to investment prospects.

6.2 Pre-Games construction program

One concern was that the Olympics could result in making public investments too soon. The pre-Games construction program requires a great deal of investments to be made within a few short years. Critics of the preliminary study raised a number of concerns about the accelerated investment schedule, these are discussed here.

6.2.1 The risk of choosing projects with negative net benefits

The impact of timing on the benefit cost ratio of a construction project is a legitimate concern. It is possible that accelerating the provincial construction program to accommodate the 2010 Games would result in undertaking investment before it is appropriate, i.e., the present value benefits would be surpassed by the present value costs if constructed for 2010, whereas construction in a late period could result in positive net benefits. This outcome would not be an efficient allocation of government investment funds, as they could be deployed to other uses with positive net present values. Projects with negative net benefits undertaken because of the Olympics would leave British Columbia worse off. The Olympics should not be used as a rational for undertaking such projects.

A related issue is whether delaying construction until after the Olympics would produce high present values of net benefits. We believe that such cases are red herrings. Any project with a positive net present value of benefits minus costs is socially desirable, and should be undertaken. The Games in fact may assist the government in overcoming inertia with respect to critical transport investment and improving the safety of busy highway corridors. We have recently been advised that Highway 99 is projected to reach capacity by 2012 *without the Olympics.*

We acknowledge that there may be other projects with higher benefit cost ratios than Olympics induced projects and that, due to capital rationing, not all projects can be undertaken at once. Thus funding on Olympics induced projects would have an opportunity cost associated with that. However, the recent introduction in British Columbia of public/private partnerships as a source of infrastructure funding may result in the elimination of such opportunity costs. This development gives us some confidence that the capital-rationing problem in British Columbia, at least with respect to Highway 99 expansion, is generally being solved.

6.3 Mitigation of impacts due to inflation or out-of-province labour migration

One possibility is that spending associated with the Olympics construction program, as well as spending during the Olympics itself, could occur with reduced benefits to the British Columbia economy either because of inflation induced by this spending, or due to the labour being provided by out-of-province workers. To address these possibilities, we looked at two key areas. First, we examined the record of the massive construction program associated with Expo86. Second, we looked at the record of the British Columbia economy in attracting in-migration during economic booms. In-migration would result in benefits staying within British Columbia, as British Columbia resident labour would be used rather than out-of-province workers. The difference may seem subtle, but is important – resident labour enables indirect and induced economic impacts.

6.3.1 Will inflation reduce impacts?

This section first looks at what economic theory says about increased spending mitigating real impacts via inflation. Then it looks at the record during the Expo86 construction program. Expo86 saw a large number of major construction projects in the province timed to be completed during the Expo year. These included:

- The Expo86 site construction
- The Canada Place convention centre and cruise ship terminal
- The Coquihalla highway
- The Cambie Street bridge
- The Alex Fraser bridge
- The Tumbler Ridge coal mines, rail lines, town site and other investments
- Skytrain Phase I

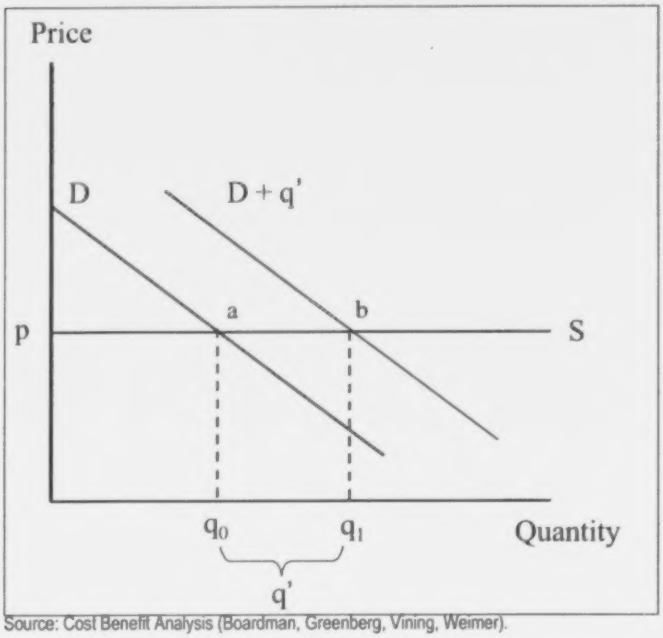
6.3.2 Economic theory

When considering any major construction program an important fact is whether the investment program is of such a magnitude that it will change the price level in the provincial construction industry. If so, the real impacts of the program (e.g., increased employment) will be dissipated in part by causing prices to rise. This inflation could potentially result in other projects being deferred or cancelled due to the higher prices.

Economic theory considers two cases.

There is available capacity in the construction sector. Economists would state this as a case where the provincial construction industry supply curve is flat over the range of output needed to meet normal plus pre-Games construction demand. In this case there is no opportunity cost associated with the purchase of construction services to build the Olympics and related infrastructure. There would be no inflation effect. Diagrammatically, this case is shown in **Figure 6-1.**

Figure 6-1: Increase in Demand for Construction Output: No Price Change



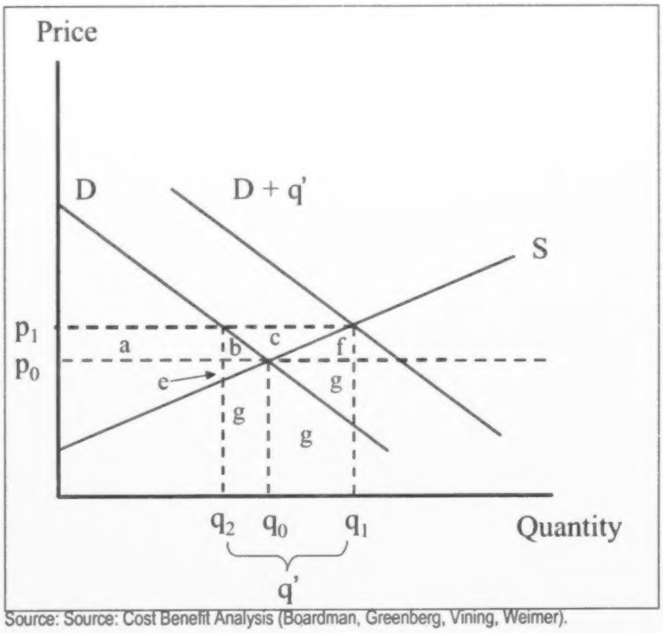
Source: Cost Benefit Analysis (Boardman, Greenberg, Vining, Weimer).

If the total construction output purchased for the 2010 Games is represented by q' in Figure 6-1 and the normal demand for construction is represented by D, then the total demand for construction output in the province is represented by D + q'. As implied by the horizontal supply curve (marked S), the marginal cost for construction output is unchanged and the price stays at p. The opportunity cost to society of the purchase of construction output for the Olympics is represented by area abq_1q_0 (calculated as p x q') and equals the budgetary outlay.

If the capacity of the British Columbia construction industry is limited. Economists would state this case as one where the construction supply curve is upward sloping, with increasing marginal costs over the range of output needed to meet normal plus pre-Games demand. In this case, the Olympics construction program would result in increased prices in the British Columbia construction sector. These higher prices could result in decisions to defer or cancel other potential construction projects in British Columbia.

In the parlance of the economist, the *social* benefit of the purchase of construction services for the Olympics will be *less* than the budget outlay. With an upward sloping industry demand curve, a substantial increase in demand leads to a new, higher market price. The higher price in the construction industry generates a *social surplus* for suppliers in the construction industry. The opportunity cost of pre-Games construction will be equal to the budgetary outlay less the increase in the social surplus that accrues to the market for construction labour. This is shown in **Figure 6-2.**

Figure 6-2: Increase in Demand for Construction Output: Price Increase



Source: Source: Cost Benefit Analysis (Boardman, Greenberg, Vining, Weimer).

The net social impact of the situation depicted in Figure 6-2 is calculated as in **Table 25**.

Table 25: Social Impact of a Construction Price Increase Due to Pre-Games Demand

Social Effect	Description	Measure
Positive	**Gain** in producer surplus to suppliers and labour in the construction industry.	a, b and c
Negative	**Loss** in consumer surplus to other purchasers of construction output.	a and b.
Net (Positive minus Negative)	**Gain** in surplus to British Columbia	c

The marginal costs in the construction industry increase with output if the industry supply curve (marked S) is upward sloping, such as in Figure 6-2. Since price is equal to the marginal cost of the last unit of output produced, the price rises. This causes the other purchasers of construction outputs, represented by industry demand curve D, to reduce the quantity they purchase. The reduction in demand is represented by the horizontal difference between q_0 and q_2. The construction output purchased for pre-Games construction, represented by the horizontal shift in the industry demand curve from D to D + q', comprises output bid away from previous buyers ($q_0 - q_2$) as well as additional output sold in the market ($q_1 - q_0$). As a result of the q' increase in demand for industry output, the price rises from p_0 to p_1.

The opportunity cost of the spending on pre-Games construction is the budgetary outlay minus the social impact of the purchase. The government's outlay is represented by areas b, c, f, g and e.

Which prevails? It is an empirical matter as to whether the British Columbia Construction industry has sufficient capacity to accommodate the construction program of the Olympics without inducing a benefit reducing inflation effect in the construction industry. This of course will depend on conditions in the British Columbia construction market during the years immediately preceding the Olympics. Nevertheless, it is useful to examine what the record in British Columbia was for the massive construction programs that culminated in 1986.

6.3.3 Evidence: historic Vancouver construction price levels

As described earlier, the hosting of Expo86 resulted in major construction programs which culminated in 1986. These included:

- The Expo86 site construction
- The Canada Place convention centre and cruise ship terminal
- The Coquihalla highway
- The Cambie Street bridge
- The Alex Fraser bridge
- The Tumbler Ridge coal mines, rail lines, townsite and other investments
- Skytrain Phase I

> There is no indication of an inflationary effect of the Expo86 construction program …
>
> … While conditions in the BC construction industry may be different in the period prior to the 2010 Olympics, the historical evidence does not support an inflationary effect which would reduce the spending and employment benefits of the Olympics construction program.

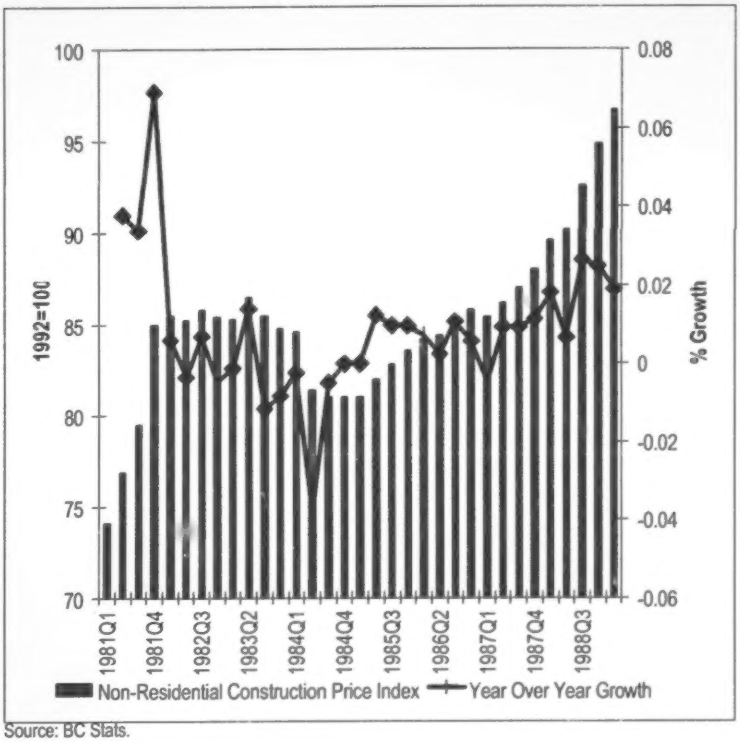
Each of these were major construction projects. Their combined effect could have induced construction inflation if the capacity of the British Columbia construction industry was inadequate for the combined tasks of the Expo86 projects as well as other routine construction demands in British Columbia.

The non-residential construction price index for Vancouver during the decade of the 1980s is presented in **Figure 6-3**. The Vancouver index was chosen as most of the construction program was based in Vancouver.

As can be seen, there is no indication of an inflationary effect of the massive Expo86 construction program. To the contrary, the construction price index fell in 1983 and did not return to pre-1982 levels until 1987. There was growth in the construction price index in the four quarters prior to the opening of Expo86, but this appears to be a matter of catching up to previously prevailing construction prices rather than an overheated construction sector. Overall, in the period from 1983 to 1986, there was no net inflation in the Vancouver construction price index.

While conditions in the British Columbia construction industry may be different in the period prior to the 2010 Olympics, the historical evidence does not support an inflationary effect which would reduce the spending and employment benefits of the Olympics construction program.

Figure 6-3: Vancouver Non-Residential Construction Price Index 1981-1989



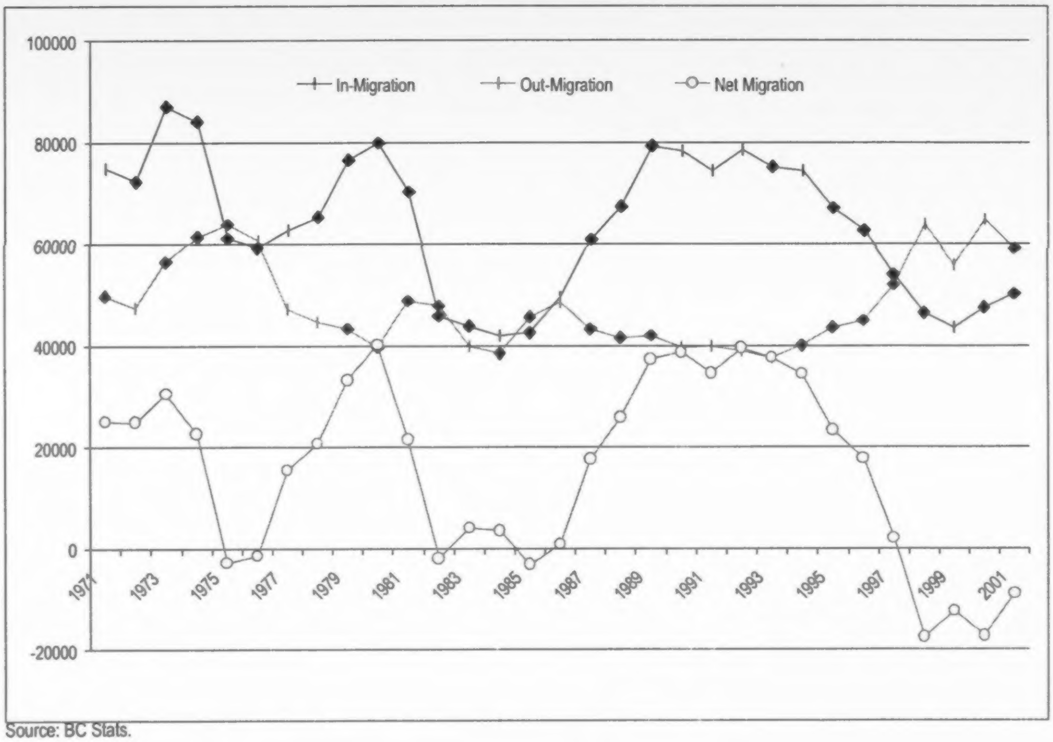
Source: BC Stats.

6.4 British Columbia in-migration

A second factor which could mitigate the impact of the Olympics is that limited capacity in the British Columbia labour sector could result in using labour outside the province. To the extent that this were to happen, the employment and other economic impacts within the Province of British Columbia would be mitigated. One dimension of examining this issue is whether economic expansion results in net in-migration to British Columbia. If this occurs, then increased labour spending will remain in the province potentially enabling indirect and induced impacts.

British Columbia inter-migration data is presented in **Figure 6-4**. This shows inter-provincial in migration, out migration, and net migration.

Figure 6-4: Inter-Provincial In-Migration and Out-Migration – British Columbia 1971-2001

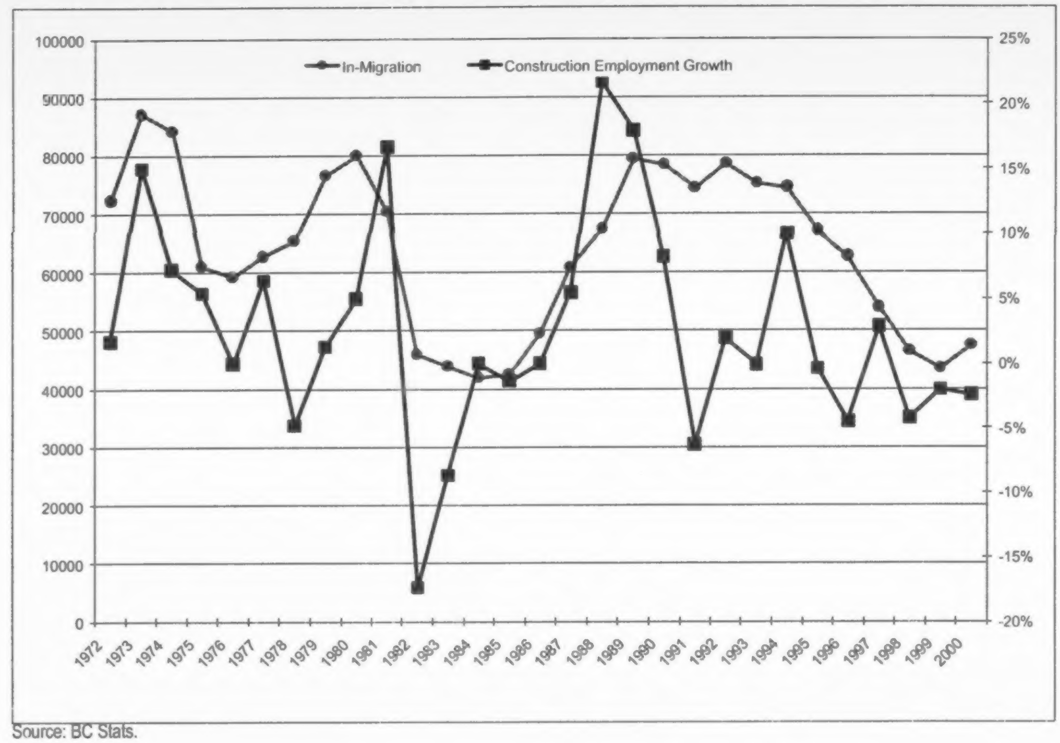


Source: BC Stats.

The next step is to compare net-interprovincial migration to growth in construction employment. **Figure 6-5** plots these two series. There is a moderate, positive correlation between the level of in-migration to British Columbia and *growth* in provincial construction employment. The correlation coefficient is 0.57 indicating a positive relationship between these two variables. That is, a greater level in in-migration tends to accompany growth in construction employment, although this relationship is not perfect.

What is not clear from the correlation analysis is *causality*. That is, is expansion in employment accommodated by in-migration of labour, or does in-migration cause increases in employment? Correlation analysis does not identify which variable initiates the positive linear relationship between in-migration and construction employment growth.

Figure 6-5: In-Migration and British Columbia Construction Employment Growth (1972-2000)



Source: BC Stats.

As another piece of evidence, we examined a statistical relationship between in-migration and a broader economic indicator than construction employment. BC Stats has estimated an interprovincial in-migration equation for British Columbia.[37] In this equation, the difference (A) between the British Columbia and Alberta unemployment rates and the difference between the British Columbia and Alberta GDP growth rates (GDP) determine in-migration to British Columbia (M). The estimated equation is:

$$InM = 72324 - 3903UnA + 3290GDP - 9013Dum$$

Standard Error:	(3411)	(1607)	(910)	(4930)
T-Value:	(21.2)	(-2.4)	(3.6)	(-1.8)

In this model, British Columbia construction sector employment is embedded in the unemployment differential term on the right hand side of the equation.[38] The relationship is negative – if British Columbia unemployment is greater (less) than Alberta unemployment, then fewer (more) individuals will migrate from Alberta to British Columbia. As well, as British Columbia GDP is greater, in-migration to British Columbia is stimulated.

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[37] Interprovincial Migration Model, BC Stats, February 2000. This document is available on BC Stats website.

[38] Construction employment has ranged between 5 and 8 percent of total provincial employment between 1972 and 2000.

The evidence presented here is supportive of expanded British Columbia economic activity resulting in some increased in-migration. This expansion of labour supply both reduces any inflationary tendency from increased spending and keeps more of the spending resident within the British Columbia economy. To the extent this happens, increased economic activity may enable indirect and induced economic impacts.

The evidence presented here is supportive of expanded provincial economic activity resulting in some increased in-migration. ...

... Thus increased economic activity may enable indirect and induced economic impacts.

6.5 User benefits of transportation improvements

The 2010 Bid is related to at least two transportation infrastructure improvements that will create lasting benefits for users of these facilities including increasing the capacity and safety on the Highway 99 Sea to Sky highway from North Vancouver to Whistler.

User benefits of these improvements will be in the form of travel time savings, vehicle operating cost savings, accident cost reductions and parking cost reductions. We note that these types of impacts are typically used in cost benefit or multiple account analysis rather than in economic impact analysis. We describe these benefits although we do not add them to the traditional economic impact analysis.

To look at these impacts, we attempted to examine existing studies of these two projects, as it was beyond the scope of our study to separately model these complicated transportation investments.

6.6 Costs of congestion during the Games

Residents will certainly experience an increase in road and facility congestion during the Olympic Games. There is a real economic cost associated with this inconvenience. There is a well-established literature on the value of time savings/delays to commuters and travellers. Suggested values for Lower Mainland residents are $14 per hour for auto and transit users and $36 to $45 dollars per hour for commercial users. In the short time frame of this update to the preliminary economic impact report, the resources and analytical tools to do this quickly or easily are not available.

The costs of congestion in the Lower Mainland are only expected to last for the few weeks that the Games will take place. The annoyance caused by the congestion of the Games will not be unlike inconvenience caused by other projects in the region. Compared to the traffic delays caused by the Lions Gate Bridge upgrades over 2001 and half of 2002, many Lower Mainland residents will not be phased by the Games. Furthermore, to the extent that people can telecommute, this cost will be mitigated.

This real but unmeasured cost is balanced somewhat by the equally real but unmeasured benefit that will accrue to residents during the Games. That benefit will be hometown pride and an international hosting experience. This will last a lifetime.

7.0 Conclusions

In January 2002 the British Columbia Trade and Investment Office of the Ministry of Competition, Science and Enterprise published the preliminary results of a study assessing the in-province economic impact of the 2010 Winter Olympic and Paralympic Games. In July 2002, the BC Trade and Investment Office and the Bid Secretariat commissioned InterVISTAS Consulting Inc. to review and update the preliminary study. The purpose of the update was to verify the methodology employed in the preliminary study and to incorporate new information that has become available since the publication of the January 2002 report.

InterVISTAS Consulting Inc. (IVC) verified that the approach employed by the British Columbia Trade and Investment Office was generally thorough and conceptually valid. However, some revisions were made to the parameters and structure of the model. Notable updates and corrections to the model parameters include:

- New information on timing and costs of investments supplied by the Bid Corporation
- A more conservative approach to visitor projections and associated expenditures was taken.
- Transport investments were excluded from the incremental impacts.

Also, the model structure was revised. Significant changes include:

- Real values of investments and expenditures are the new basis for estimated economic impacts. The previous use of discounted investments and expenditures was corrected.
- The provincial tax impact was updated to include the British Columbia Corporate Income Tax.
- The economic impact model was modified to compute wage impacts.

A comparison of the updated economic impacts with the preliminary results as well as a summary of research into additional economic issues relating to the 2010 Games are summarised in the following sections.

7.1 Comparison of updated economic impact with preliminary results

The net impact of all of the updates and revisions described in this report is largely positive. While the revisions to the tourism projections and spend parameters had a significant negative impact on all tourism scenarios, the positive impact of correcting the use of discounting more than made up for the reductions.

A comparison of the preliminary results with the updated ones are provided in **Table 26**. We note that the tax revenue impacts are lower in the updated results than the preliminary results in the average scenario as a result of the updates and revisions. This is because tax revenues are collected primarily on tourism expenditures, which are somewhat lower in the new version of the model.

Table 26: Comparison of Preliminary and Updated Impacts of the 2010 Games
Total (Direct + Indirect + Induced) Incremental Economic Impacts

Tourism Impact Scenario	GDP	PYs	Fed Taxes	Prov Taxes	Local Taxes)
Low Visits Scenario					
Preliminary	$1.6 Billion	37,000	$175 Million	$164 Million	$37 Million
Update	$2.0 Billion	45,000	$187 Million	$214 Million	$43 Million
Difference	$0.4 Billion	8,000	$12 Million	$50 Million	$6 Million
% Change	25%	22%	7%	30%	16%
Medium Visits Scenario					
Preliminary	$2.4 Billion	55,000	$288 Million	$265 Million	$57 Million
Update	$2.4 Billion	54,000	$242 Million	$268 Million	$52 Million
Difference	$0 Billion	(1,000)	$(46) Million	$3 Million	$(5) Million
% Change	0%	-3%	-16%	1%	-9%
Medium-High Visits Scenario					
Preliminary	$2.8 Billion	67,000	$367 Million	$336 Million	$71 Million
Update	$3.3 Billion	77,000	$381 Million	$406 Million	$76 Million
Difference	$0.5 Billion	10,000	$14 Million	$60 Million	$5 Million
% Change	18%	15%	4%	18%	7%
High Visits Scenario					
Preliminary	$3.5 Billion	83,000	$467 Million	$426 Million	$89 Million
Update	$4.2 Billion	99,000	$513 Million	$538 Million	$99 Million
Difference	$0.7 Billion	16,000	$ 122Million	$112 Million	$10 Million
% Change	24%	22%	29%	26%	11%

Source: The Economic Impact of the Winter Olympic and Paralympic Games: Initial Estimates (BCTIO, January 2002) and The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

Consider the magnitude of the impacts resulting from the Medium-High Visits scenario. In this scenario, the 2010 Olympic Games are expected to generate 55,000 direct person years of employment (PY) over a 13-year period. This represents roughly 4,200 direct PYs on average each year, although the employment impacts vary from year to year. In relation to the existing employment bases of the affected industries, an annual employment impact of 4,200 direct PYs per year seems reasonable. For example, tourism currently accounts for 110,000 jobs in British Columbia. If all of the annual employment impacts were created in the tourism industry, the new employment would represent a level of annual growth of less than 4 percent. Similarly, British Columbia's construction industry currently supports roughly 112,000 jobs. Even if all of the direct employment impacts in the years prior to 2010 were concentrated in the construction sector, in our view the total employment growth would not be an unmanageable leap. Based on these comparisons, we find the magnitude of the updated economic impact results credible and achievable.

7.2 With the Vancouver Exhibition and Convention Centre

The planned Vancouver Convention and Exhibition Centre expansion adds another dimension to the economic impact of the Games In addition to serving as the International Broadcasting Centre while the Games are in progress, this facility should increase pre and post-Games external visitation. As such, expansion of the Vancouver Convention and Exhibition Centre would be highly beneficial in two regards:

- meeting a critical facility need for the Games; and,
- raising the capacity of Vancouver's convention facility so that a higher rate of growth in international delegates may be achieved in the pre and post-Games periods.

IVC was not commissioned to review and verify these economic impact estimates. The estimates came from separate studies, commissioned by the private sector Vancouver Convention Centre Expansion Task Force and the federal Department of Western Economic Diversification, and reviewed by both KPMG and PricewaterhouseCoopers.

Since the two studies are apparently mutually exclusive in scope, we believe that it is conceptually valid to add together the total (direct, indirect and induced)[39] incremental impact of the Games to the total incremental impact enabled for the Olympics by the VCEC expansion and have done so in **Table 28**. Summing the medium-high incremental economic impact of the Games and the economic impact resulting from the moderate growth scenario associated with VCEC expansion (attributable to the Games) results in more than doubling the impacts of the Games alone.[40]

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[39] Total impacts were used rather than direct impacts, as the VCEC economic impact study only provides information on total impacts.

[40] Alternative combinations of the incremental economic impacts of the VCEC expansion and the Games are provided in Appendix C.

Table 28: Combined Impacts of Games and VCEC Expansion
Total (Direct + Indirect + Induced) Incremental Economic Impacts

	GDP	Person Years	Federal Taxes	Provincial Taxes	Local Taxes
Low Scenario					
Preliminary	$5.7 Billion	118,000	$628 Million	$594 Million	$123 Million
Update	$6.1 Billion	126,000	$640 Million	$644 Million	$129 Million
Difference	$0.4 Billion	8,000	$12 Million	$50 Million	$6 Million
% Change	7%	7%	2%	8%	5%
Moderate Scenario					
Preliminary	$8.1 Billion	182,000	$946 Million	$882 Million	$180 Million
Update	$8.4 Billion	187,000	$930 Million	$918 Million	$180 Million
Difference	$0.3 Billion	5,000	$(16) Million	$36 Million	$0 Million
% Change	4%	3%	-2%	4%	0%
High Scenario					
Preliminary	$10.0 Billion	228,000	$1,185 Million	$1,100 Million	$224 Million
Update	$10.7 Billion	244,000	$1,231 Million	$1,212 Million	$234 Million
Difference	$0.7 Billion	16,000	$46 Million	$112 Million	$10 Million
% Change	7%	7%	4%	10%	4%

Source: The Economic Impact of the Winter Olympic and Paralympic Games: Initial Estimates (BCTIO, January 2002) and The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

7.3 Additional analysis

With respect to the issues not addressed in original economic impact analysis we conclude that:

- Economic diversification through increased trade and investment could be realised as a result of the Olympics. This was the experience in Atlanta and Sydney from hosting the 1996 and 2000 Games respectively. However, realising such economic gains would require a well co-ordinated and funded marketing program as were undertaken in Georgia and Australia.
- The accelerated construction program required by the Games should not lead to sub-optimal investments. Each project will be evaluated on its own merits and would be undertaken only if it has a positive net present value.
- If the price level in the construction industry rises during the pre-Games construction phase, the employment component of the economic impacts would be reduced. In this scenario, each dollar of construction expenditure would purchase less labour. However, we observe that the price level in the Vancouver construction industry did not rise during the intense construction period prior to Expo86, suggesting such an impact may be more hypothetical than a certainty.
- There would be considerable socio-economic benefits from investments in transportation improvements in addition to the economic impact of construction expenditures. The socio-economic benefits have not been quantified in this analysis and, to be conservative, the economic impact of construction has not been included in the incremental economic impacts of the Games.
- The costs of congestion to residents of the Lower Mainland during the Games event are expected to be real and positive. However, the transportation and highway improvements would mitigate these impacts, and when compared to the inconveniences caused by other projects in the region (such as the Lions Gate Bridge improvements), they are not without precedent.

Appendices

Appendix A – Example of an Input Output Matrix

The following are excerpts from the make (Table A - 1) and use (Table A - 2) matrices that show the input-output relationship of various industries.[41] Each number on the vertical axis represents a commodity aggregation – the industries producing these commodities are on the horizontal axis. For example, in the table agriculture is industry "1", the fishing and trapping industries are industry "2", etc. Transport (in industry aggregation M) is industry 30.

The transport industry produces $25.3 million dollars in commodity aggregation "3" which is "other agricultural products", $611.9 million in commodity aggregation "57" which is "other transport equipment" (from make table), etc. It uses (Use matrix) $7.5 million from "other agricultural products" (e.g., wood for rail ties), $0.5 million from commodity aggregation "9" which is "coal", and so on.

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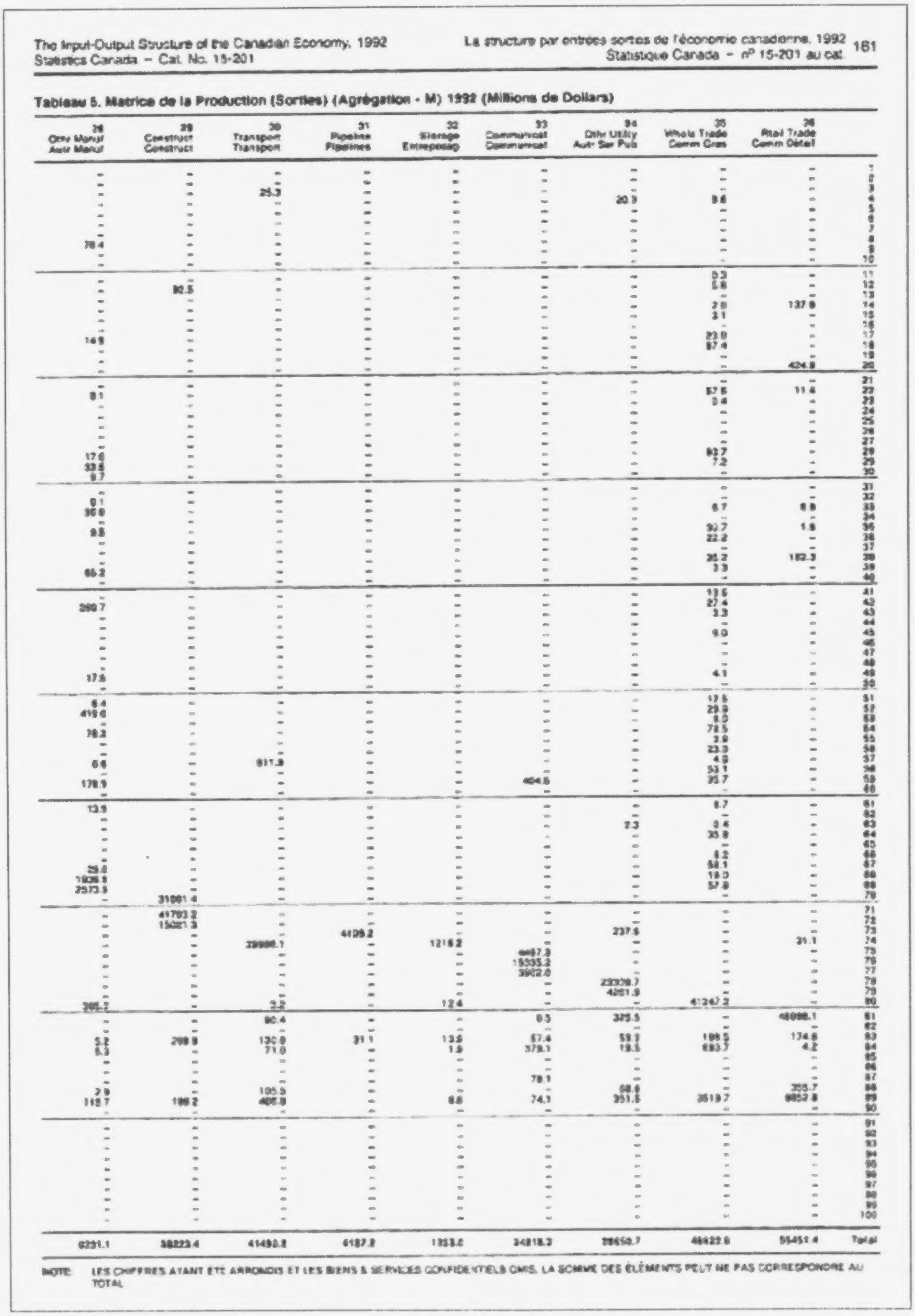
[41] Source: Statistics Canada, (1992), Make/Use/Demand Matrix: Catalogue 15-201, "The Input-Output Structure of the Canadian Economy."

Table A - 1: Example of a *Make* Matrix



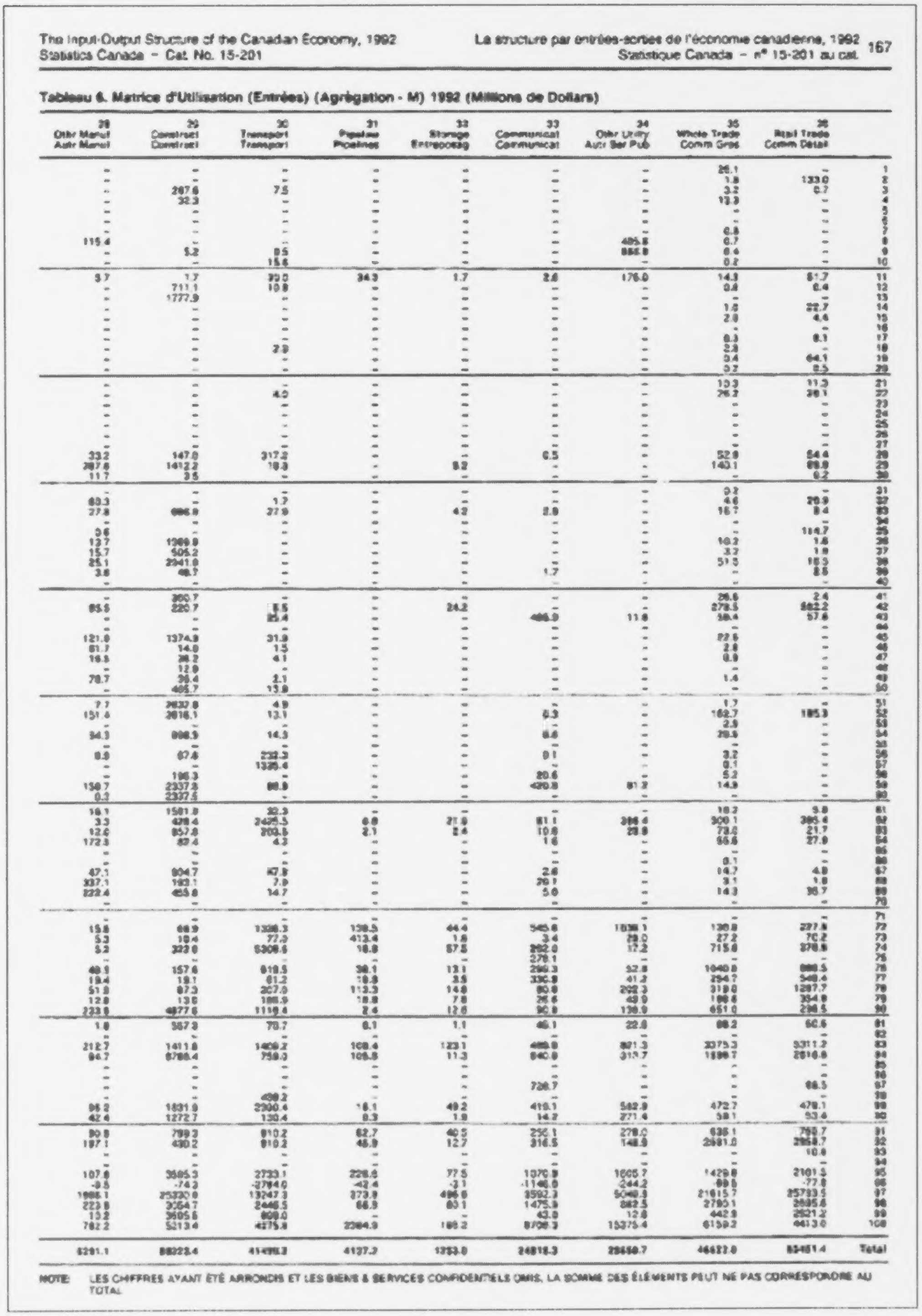
The Input-Output Structure of the Canadian Economy, 1992
Statistics Canada – Cat. No. 15-201

La structure par entrées sorties de l'économie canadienne, 1992
Statistique Canada – nº 15-201 au cat. 181

Tableau 5. Matrice de la Production (Sorties) (Agrégation - M) 1992 (Millions de Dollars)

NOTE: LES CHIFFRES AYANT ÉTÉ ARRONDIS ET LES BIENS & SERVICES CONFIDENTIELS OMIS, LA SOMME DES ÉLÉMENTS PEUT NE PAS CORRESPONDRE AU TOTAL

Table A - 2: Example of a *Use* Matrix



The Input-Output Structure of the Canadian Economy, 1992
Statistics Canada – Cat. No. 15-201

La structure par entrées-sorties de l'économie canadienne, 1992
Statistique Canada – n° 15-201 au cat.

167

Tableau 6. Matrice d'Utilisation (Entrées) (Agrégation - M) 1992 (Millions de Dollars)

28 Othr Manuf Autr Manuf	29 Construct Construct	30 Transport Transport	31 Pipelines Pipelines	32 Storage Entreposag	33 Communicat Communicat	34 Othr Utility Autr Ser Pub	35 Whole Trade Comm Gros	36 Retail Trade Comm Detail	
-	-	-	-	-	-	-	26.1	-	1
-	-	-	-	-	-	-	1.8	133.0	2
-	287.6	7.5	-	-	-	-	3.2	0.7	3
-	32.3	-	-	-	-	-	13.3	-	4
-	-	-	-	-	-	-	-	-	5
-	-	-	-	-	-	-	-	-	6
-	-	-	-	-	-	-	0.8	-	7
115.4	-	-	-	-	-	405.8	0.7	-	8
-	5.2	0.5	-	-	-	888.8	0.4	-	9
-	-	15.6	-	-	-	-	0.2	-	10
3.7	1.7	33.0	34.3	1.7	2.6	176.0	14.3	51.7	11
-	711.1	10.8	-	-	-	-	0.8	0.4	12
-	1777.9	-	-	-	-	-	-	-	13
-	-	-	-	-	-	-	1.0	22.7	14
-	-	-	-	-	-	-	2.8	4.6	15
-	-	-	-	-	-	-	-	-	16
-	-	-	-	-	-	-	0.3	8.1	17
-	-	2.9	-	-	-	-	2.3	-	18
-	-	-	-	-	-	-	0.4	64.1	19
-	-	-	-	-	-	-	0.7	0.5	20
-	-	-	-	-	-	-	10.3	11.3	21
-	-	4.0	-	-	-	-	26.2	26.1	22
-	-	-	-	-	-	-	-	-	23
-	-	-	-	-	-	-	-	-	24
-	-	-	-	-	-	-	-	-	25
-	-	-	-	-	-	-	-	-	26
-	-	-	-	-	-	-	-	-	27
33.2	147.0	317.2	-	-	6.5	-	52.8	54.4	28
287.6	1412.2	18.3	-	8.2	-	-	143.1	88.8	29
11.7	3.5	-	-	-	-	-	-	0.2	30
-	-	-	-	-	-	-	0.2	-	31
80.3	-	1.7	-	-	-	-	4.6	20.9	32
27.8	686.8	27.9	-	4.2	2.8	-	16.7	8.4	33
-	-	-	-	-	-	-	-	-	34
3.6	-	-	-	-	-	-	-	114.7	35
12.7	1369.8	-	-	-	-	-	10.2	1.6	36
15.7	505.2	-	-	-	-	-	3.7	1.9	37
25.1	2341.8	-	-	-	-	-	51.5	16.5	38
3.8	48.7	-	-	-	1.7	-	-	8.5	39
-	-	-	-	-	-	-	-	-	40
-	300.7	-	-	-	-	-	26.6	2.4	41
85.5	220.7	5.5	-	24.2	-	-	278.5	582.2	42
-	-	25.4	-	-	486.9	11.8	58.4	57.6	43
-	-	-	-	-	-	-	-	-	44
121.8	1374.9	31.9	-	-	-	-	22.6	-	45
81.7	14.0	1.5	-	-	-	-	2.8	-	46
16.5	28.2	4.1	-	-	-	-	0.9	-	47
-	12.9	-	-	-	-	-	-	-	48
78.7	36.4	2.1	-	-	-	-	1.4	-	49
-	405.7	13.8	-	-	-	-	-	-	50
7.7	2632.8	4.9	-	-	-	-	1.7	-	51
151.6	2016.1	13.1	-	-	6.3	-	182.7	185.3	52
-	-	-	-	-	-	-	2.5	-	53
34.3	898.5	14.5	-	-	8.6	-	28.6	-	54
-	-	-	-	-	-	-	-	-	55
0.9	67.6	232.3	-	-	0.1	-	3.2	-	56
-	-	1326.4	-	-	-	-	0.1	-	57
-	186.3	-	-	-	20.6	-	5.2	-	58
150.7	2337.8	88.8	-	-	420.8	81.2	14.9	-	59
0.3	2337.5	-	-	-	-	-	-	-	60
18.1	1581.8	32.3	-	-	-	-	18.2	5.8	61
3.3	428.4	2425.5	6.8	21.8	81.1	388.4	300.1	385.4	62
12.6	857.8	203.5	2.1	2.4	10.8	28.8	73.6	21.7	63
172.3	87.4	4.3	-	-	1.6	-	56.6	27.9	64
-	-	-	-	-	-	-	-	-	65
-	-	-	-	-	-	-	0.1	-	66
47.1	804.7	47.8	-	-	2.6	-	14.7	4.8	67
337.1	182.1	7.9	-	-	20.1	-	3.1	1.8	68
222.4	455.8	14.7	-	-	5.0	-	14.3	38.7	69
-	-	-	-	-	-	-	-	-	70
-	-	-	-	-	-	-	-	-	71
15.8	68.9	1338.3	138.5	44.4	545.6	1838.1	130.8	277.8	72
5.3	10.4	77.3	413.4	1.6	3.4	28.0	27.2	70.2	73
5.2	322.0	5308.6	18.8	57.5	292.0	17.2	715.8	378.8	74
-	-	-	-	-	278.1	-	-	-	75
48.3	157.6	818.5	38.1	13.1	298.3	52.8	1040.8	888.5	76
19.4	19.1	61.2	18.8	3.5	330.8	41.2	294.7	548.4	77
51.8	87.3	207.0	113.3	14.8	80.8	202.3	319.0	1287.7	78
12.8	13.6	186.9	18.8	7.8	26.6	43.9	188.6	354.8	79
233.8	4877.6	1118.4	2.4	12.6	90.8	138.0	651.0	298.5	80
1.8	587.3	78.7	6.1	1.1	46.1	22.8	88.2	60.6	81
-	-	-	-	-	-	-	-	-	82
212.7	1411.8	1409.2	108.4	123.1	488.8	871.3	3375.3	3311.2	83
94.7	8788.4	758.0	105.8	11.3	840.8	313.7	1898.7	2810.8	84
-	-	-	-	-	-	-	-	-	85
-	-	-	-	-	-	-	-	-	86
-	-	-	-	-	728.7	-	-	88.5	87
-	-	438.2	-	-	-	-	-	-	88
95.2	1831.9	2300.4	18.1	49.2	410.1	582.9	472.7	478.1	89
42.4	1272.7	130.4	8.3	1.9	14.2	271.4	58.1	53.4	90
90.8	799.3	810.2	62.7	40.5	256.1	278.0	638.1	798.7	91
197.1	430.2	810.2	46.9	12.7	316.5	148.9	2681.0	2858.7	92
-	-	-	-	-	-	-	-	10.8	93
-	-	-	-	-	-	-	-	-	94
107.8	3505.3	2733.1	228.6	77.5	1070.9	1605.7	1429.8	2101.5	95
-0.5	-74.2	-2794.0	-42.4	-3.1	-1146.0	-244.2	-88.5	-77.8	96
1988.1	25330.8	13247.3	373.9	496.8	3592.3	5048.8	21615.7	25733.5	97
223.8	3054.7	2446.5	66.3	83.1	1475.9	882.5	2793.1	2885.6	98
13.2	3505.6	808.0	-	-	43.0	12.8	442.9	2521.2	99
782.2	5213.4	4275.8	2384.9	188.2	8708.3	15375.4	6159.2	4413.0	100
8291.1	88223.4	41499.3	4127.2	1253.0	24815.3	28650.7	46627.0	83481.4	Total

NOTE: LES CHIFFRES AYANT ÉTÉ ARRONDIS ET LES BIENS & SERVICES CONFIDENTIELS OMIS, LA SOMME DES ÉLÉMENTS PEUT NE PAS CORRESPONDRE AU TOTAL

Appendix B – British Columbia Corporate Income Tax

For a number of years the British Columbia government has published a report entitled "British Columbia Economic Multipliers and How to Use Them". This report provides economic multipliers derived from the most recent version of the provincial input-output model. Capital Projects Branch used some of these multipliers to develop its estimated impacts. The tax multipliers in the report include most government revenue sources – sales taxes, miscellaneous commodity taxes, and personal income taxes – but do not include corporate income taxes.

This task was interpreted as eliminating this shortcoming of the British Columbia Input-Output Model (BCIOM)– to develop estimates of corporate income taxes within the BCIOM by industry and then modify the tax multipliers accordingly.

The principal reason that corporate income taxes have not been estimated in recent updates to the BCIOM is that it is very difficult to find information on corporate income taxes paid *by industry*. This is still the case. However, if we make the assumption that every business in every industry pays corporate income taxes at the same nominal rate, then the estimation process becomes fairly simple. All we really need is an estimate of the total provincial corporate taxes paid (in 1996, say) which can be found in government financial documents (i.e., the Budget); and an estimate of total before-tax profits for the entire provincial business sector. The latter information is available as part of the BCIOM data set – it is available by industry and of course the total is just the sum across all industries. The final step in the procedure is to adjust the results to reflect changes in provincial corporate income tax rates which have occurred since 1996.

This reasoning has provided a methodology which results in estimation of the BC corporate income taxes[42] associated with any particular application of the model. Running the model then for every industry results in an improved set of tax multipliers. Those changed tax multipliers which are particularly appropriate for this project are displayed in the **Table B - 1** below. These are the total tax multipliers, including corporate income taxes.

Table B - 1: Revised Provincial Tax Multipliers

Industry Code		Name	Provincial Taxes		
Large	Medium		Direct	Indirect	Induced
	8	Food Mfg	0.010	0.015	0.010
	9	Beverage Mfg	0.016	0.014	0.010
60		Misc. Clothing Mfg	0.008	0.008	0.015
	18	Furn & Fix	0.013	0.014	0.014

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[42] Note that federal corporate income taxes have not (yet) been estimated by a similar procedure. In principle the same methodology could be used – however, while total federal corporate income taxes are readily available, the portion of that total which comes from BC is difficult to determine.

Industry Code		Name	Provincial Taxes		
	20	Printing & Publ.	0.017	0.014	0.015
	25	Electrical & Electronics	0.015	0.008	0.009
	29	Other Mfg	0.014	0.009	0.014
164		Residential Construction	0.055	0.013	0.014
165		Non-Residential Construction	0.046	0.014	0.015
166		Road Construction	0.045	0.018	0.016
	31	Transportation	0.020	0.023	0.016
	34	Communications	0.035	0.011	0.013
	36	Wholesale Trade	0.030	0.020	0.017
	37	Retail Trade	0.029	0.018	0.019
	38	Finance	0.057	0.024	0.014
	39	Insurance	0.070	0.030	0.017
210		Accommodation. Services	0.057	0.013	0.016
211		Food & Beverage Services	0.027	0.014	0.015
	41	Business Services	0.024	0.017	0.020
	45	Amuse/Recreation Services	0.025	0.021	0.015

Apart from the assumption that all industries face the same corporate tax regime, probably the biggest single concern with the above methodology and results is that they are almost entirely based on data for a particular year (in the current BCIOM, 1996). Cyclical industries which go through irregular boom/bust cycles have significant profits in some years and probably show losses in other years. In the former they pay significant corporate income taxes; in the latter they pay nothing. We have assumed that whatever was the case in 1996 is always the case. Ameliorating this concern are the following observations: though any one industry could be quite a bit out because of this, consideration of all industries means that there will be some "balancing out" of the cycles; also, the same concern could in fact be expressed with respect to any results from an input-output model based on a single year of data – there is an implicit assumption in almost all IO work that the year of the model has essentially the same characteristics as the year for which the results are being sought.

Appendix C – Summary Tables of Economic Impact

Table C - 1: Updated *Gross* Economic Impact of the 2010 Games for All Scenarios

Tourism Impact Scenario	GDP	Employment (Person Years)	Wages	Fed Taxes	Provincial Taxes	Local Taxes
Low Visits Scenario						
Direct	$2,362 Million	58,000	$1,937 Million	$198 Million	$203 Million	$26 Million
Indirect + Induced	$1,213 Million	21,000	$719 Million	$75 Million	$115 Million	$34 Million
Total	*$3,575 Million*	*79,000*	*$2,656 Million*	*$273 Million*	*$318 Million*	*$60 Million*
Medium Visits Scenario						
Direct	$2,614 Million	65,000	$2,172 Million	$244 Million	$245 Million	$31 Million
Indirect + Induced	$1,355 Million	24,000	$804 Million	$87 Million	$130 Million	$39 Million
Total	*$3,969 Million*	*89,000*	*$2,976 Million*	*$331 Million*	*$375 Million*	*$70 Million*
Medium-High Visits Scenario						
Direct	$3,208 Million	81,000	$2,727 Million	$357 Million	$347 Million	$43 Million
Indirect + Induced	$1,693 Million	30,000	$1,008 Million	$113 Million	$166 Million	$51 Million
Total	*$4,901 Million*	*111,000*	*$3,735 Million*	*$470 Million*	*$513 Million*	*$94 Million*
High Visits Scenario						
Direct	$3,782 Million	97,000	$3,261 Million	$462 Million	$442 Million	$53 Million
Indirect + Induced	$2,025 Million	36,000	$1,209 Million	$138 Million	$201 Million	$63 Million
Total	*$5,807 Million*	*133,000*	*$4,470 Million*	*$600 Million*	*$643 Million*	*$116 Million*

Source: The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

Table C - 2: Updated *Incremental* Economic Impact of the 2010 Games for All Scenarios

Tourism Impact Scenario	GDP	Employment (Person Years)	Wages	Fed Taxes	Provincial Taxes	Local Taxes
Low Visits Scenario						
Direct	$1,271 Million	32,000	$1,076 Million	$137 Million	$135 Million	$19 Million
Indirect + Induced	$742 Million	13,000	$440 Million	$50 Million	$79 Million	$24 Million
Total	*$2,013 Million*	*45,000*	*$1,516 Million*	*$187 Million*	*$214 Million*	*$43 Million*
Medium Visits Scenario						
Direct	$1,509 Million	39,000	$1,297 Million	$181 Million	$175 Million	$23 Million
Indirect + Induced	$879 Million	15,000	$524 Million	$61 Million	$93 Million	$29 Million
Total	*$2,388 Million*	*54,000*	*$1,821 Million*	*$242 Million*	*$268 Million*	*$52 Million*
Medium-High Visits Scenario						
Direct	$2,104 Million	55,000	$1,853 Million	$294 Million	$277 Million	$35 Million
Indirect + Induced	$1,217 Million	22,000	$727 Million	$87 Million	$129 Million	$41 Million
Total	*$3,321 Million*	*77,000*	*$2,580 Million*	*$381 Million*	*$406 Million*	*$76 Million*
High Visits Scenario						
Direct	$2,686 Million	71,000	$2,394 Million	$400 Million	$373 Million	$46 Million
Indirect + Induced	$1,553 Million	28,000	$930 Million	$113 Million	$165 Million	$53 Million
Total	*$4,239 Million*	*99,000*	*$3,324 Million*	*$513 Million*	*$538 Million*	*$99 Million*

Source: The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

Table C - 3: Comparison of Preliminary and Updated Economic Impact of the 2010 Games Total (Direct + Indirect + Induced) Incremental Economic Impacts *Excluding Transportation Investments From Updated Economic Impact*

Tourism Impact Scenario	GDP	Employment (Person Years)	Fed Taxes	Prov Taxes	Local Taxes
Low Visits Scenario					
Preliminary	$1.6 Billion	37,000	$175 Million	$164 Million	$37 Million
Update	$2.0 Billion	45,000	$187 Million	$214 Million	$43 Million
Medium Visits Scenario					
Preliminary	$2.4 Billion	55,000	$288 Million	$265 Million	$57 Million
Update	$2.4 Billion	54,000	$242 Million	$268 Million	$52 Million
Medium-High Visits Scenario					
Preliminary	$2.8 Billion	67,000	$367 Million	$336 Million	$71 Million
Update	$3.3 Billion	77,000	$381 Million	$406 Million	$76 Million
High Visits Scenario					
Preliminary	$3.5 Billion	83,000	$467 Million	$426 Million	$89 Million
Update	$4.2 Billion	99,000	$513 Million	$538 Million	$99 Million

Source: The Economic Impact of the Winter Olympic and Paralympic Games: Initial Estimates (BCTIO, January 2002) and The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

**Table C - 4: Comparison of Preliminary and Updated Economic Impact of the 2010 Games
Total (Direct + Indirect + Induced) Incremental Economic Impacts**
Including Transportation Investments In Updated Economic Impact

Tourism Impact Scenario	GDP	Employment (Person Years)	Fed Taxes	Prov Taxes	Local Taxes
Low Visits Scenario					
Preliminary	$1.6 Billion	37,000	$175 Million	$164 Million	$37 Million
Update	$2.1 Billion	47,000	$187 Million	$224 Million	$45 Million
Average Visits Scenario					
Preliminary	$2.4 Billion	55,000	$288 Million	$265 Million	$57 Million
Update	$2.5 Billion	57,000	$242 Million	$278 Million	$54 Million
Medium-High Visits Scenario					
Preliminary	$2.8 Billion	67,000	$367 Million	$336 Million	$71 Million
Update	$3.4 Billion	79,000	$381 Million	$416 Million	$78 Million
High Visits Scenario					
Preliminary	$3.5 Billion	83,000	$467 Million	$426 Million	$89 Million
Update	$4.3 Billion	101,000	$513 Million	$548 Million	$101 Million

Table C-5 shows the incremental economic impact of the VCEC Expansion as calculated in a separate study. Notice that the table shows the impacts of the expansion *with* and *without* the occurrence of the 2010 Games, and the difference between them. The additional impact *with* the Games is due to synergies between the expansion and the Games, e.g., the publicity from the Games attracts additional conventions and delegates to the VCEC. It does not include the impacts of the Games themselves, nor do the Games economic impacts include any VCEC impacts.

Table C - 5: Incremental Economic Impact of the VCEC Expansion

	GDP	Employment (Person Years)	Federal Taxes	Provincial Taxes	Local Taxes
VCEC Expansion *without* the 2010 Games					
Low Scenario	$3.5 Billion	65,000	$384 Million	$367 Million	$73 Million
Moderate Scenario	$4.3 Billion	87,000	$478 Million	$453 Million	$91 Million
High Scenario	$5.1 Billion	111,000	$575 Million	$542 Million	$108 Million
VCEC Expansion *with* the 2010 Games					
Low Scenario	$4.1 Billion	81,000	$453 Million	$430 Million	$86 Million
Moderate Scenario	$5.5 Billion	121,000	$618 Million	$581 Million	$116 Million
High Scenario	$6.5 Billion	145,000	$718 Million	$674 Million	$135 Million
Difference					
Low Scenario	$0.6 Billion	16,000	$69 Million	$63 Million	$13 Million
Moderate Scenario	$1.2 Billion	34,000	$140 Million	$128 Million	$25 Million
High Scenario	$1.4 Billion	34,000	$143 Million	$132 Million	$27 Million

Source: The Economic Impact of the Winter Olympic and Paralympic Games: Initial Estimates (BCTIO, January 2002)

Table C-6 combines the impacts of the 2010 Games with the additional impacts generated by the combination of the Games and the VCEC expansion (*Difference* in Table C-4). **Table C-7** combines the impacts of the Games with the total impact of the VCEC expansion (*VCEC Expansion with the 2010 Games* in Table C-4).

Table C - 6: Impact of the Games Including Additional Impacts of the VCEC Expansion *Generated by the Games*
Total (Direct + Indirect + Induced) Incremental Economic Impacts

	GDP	Person Years	Federal Taxes	Provincial Taxes	Local Taxes
Low Scenario					
Preliminary	$2.2 Billion	53,000	$244 Million	$227 Million	$50 Million
Update	$2.6 Billion	61,000	$256 Million	$277 Million	$56 Million
Difference	*$0.4 Billion*	*8,000*	*$12 Million*	*$50 Million*	*$6 Million*
% Change	*18%*	*15%*	*5%*	*22%*	*12%*
Moderate Scenario					
Preliminary	$3.8 Billion	95,000	$468 Million	$429 Million	$89 Million
Update	$4.1 Billion	100,000	$452 Million	$465 Million	$89 Million
Difference	*$0.3 Billion*	*5,000*	*$(16) Million*	*$36 Million*	*$0 Million*
% Change	*8%*	*5%*	*-3%*	*8%*	*0%*
High Scenario					
Preliminary	$4.9 Billion	117,000	$610 Million	$558 Million	$116 Million
Update	$5.6 Billion	133,000	$656 Million	$670 Million	$126 Million
Difference	*$0.7 Billion*	*16,000*	*$46 Million*	*$112 Million*	*$10 Million*
% Change	*14%*	*14%*	*8%*	*20%*	*9%*

Source: The Economic Impact of the Winter Olympic and Paralympic Games: Initial Estimates (BCTIO, January 2002) and The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

**Table C - 7: Combined Impacts of the Games and the VCEC Expansion
Total (Direct + Indirect + Induced) Incremental Economic Impacts**

	GDP	Person Years	Federal Taxes	Provincial Taxes	Local Taxes
Low Scenario					
Preliminary	$5.7 Billion	118,000	$628 Million	$594 Million	$123 Million
Update	$6.1 Billion	126,000	$640 Million	$644 Million	$129 Million
Difference	*$0.4 Billion*	*8,000*	*$12 Million*	*$50 Million*	*$6 Million*
% Change	*7%*	*7%*	*2%*	*8%*	*5%*
Moderate Scenario					
Preliminary	$8.1 Billion	182,000	$946 Million	$882 Million	$180 Million
Update	$8.4 Billion	187,000	$930 Million	$918 Million	$180 Million
Difference	*$0.3 Billion*	*5,000*	*$(16) Million*	*$36 Million*	*$0 Million*
% Change	*4%*	*3%*	*-2%*	*4%*	*0%*
High Scenario					
Preliminary	$10.0 Billion	228,000	$1,185 Million	$1,100 Million	$224 Million
Update	$10.7 Billion	244,000	$1,231 Million	$1,212 Million	$234 Million
Difference	*$0.7 Billion*	*16,000*	*$46 Million*	*$112 Million*	*$10 Million*
% Change	*7%*	*7%*	*4%*	*10%*	*4%*

Source: The Economic Impact of the Winter Olympic and Paralympic Games: Initial Estimates (BCTIO, January 2002) and The Economic Impact of the 2010 Winter Olympic and Paralympic Games: An Update (InterVISTAS Consulting Inc., October 2002).

Appendix D – A Selection of References Reviewed

Author or Organisation	Title or Web Page Header	Year
1999 International Olympic Committee	The Olympian Movement and the Information Society New Internet Challenges and Opportunities	1999
Alan Daniels	British Take Reins as Top Overseas Visitors to B.C.	2001
Australian Tourism Commission Online	ATC KPMG Tourism Leading Indicators Study	2002
	Tourism Satellite Account (2000-01)	2001
	Tourism Fact Sheet	2002
	Inbound forecasts (2002 - 2012)	2002
	Arrivals of overseas visitors (final data) Sept. 2002	2002
	Year 2000 - Landmark Year for Australian Tourism	2002
	Olympics Sparks Tourism Surge	2002
	Tourism Fact Sheet	2002
	Arrivals of overseas visitors (final data) June 2002	2002
	A review of the ATC's Olympic Games Strategy	2002
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	The impact of the Sydney 2000 Olympic Games on Brand Australia	2002
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BC Ministry of Finance and Corporate Relations	British Columbia Provincial Economic Multipliers and How to Use Them	2001
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Brian Chalkley and Stephen Essex	Urban Development Through Hosting International Events: A History of the Olympic Games	1999
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Canadian Tourism Commission	Canadian Tourism Commission Fact Sheet	2002
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Do Young Pyun	The Economic Impact of the Seoul Olympic Games	2000
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G.M.P. Swann, Manchester Business School	When do Major Sports Events leave a Lasting Economic Legacy?	2001
Greg Andranovich, Matthew Burbank, Charles Heying	Olympic Cities: Lessons Learned from Mega-Event Politics	2001
Harry H. Hiller	Impact and Image: the Convergence of Urban Factors in Preparing for the 1988	1989

Author or Organisation	Title or Web Page Header	Year
	Calgary Winter Olympics	
Holger Preuss	Economics of the Olympic Games - Hosting the Games 1972-2000	2000
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Idraetsfonden Danmark	The Red Thread: 12 International Sports Events in Denmark Picked out for In depth Analysis	2002
International Olympic Committee	2002 Marketing Fact File	2002
ITA Office of Travel & Tourism Industries	2000 Profile of U.S. Resident Traveler Visiting Overseas Destinations	2001
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